Student Medicine

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CONTENTS

Editorial Comment 115

Malignant Tumors in Young Adults . . . . . *Leona B. Yeager*, M.D., and *William B. Hanaford*, M.D. 119

University Students' Dental Health Service in Finland . . *Aimo V. Rantanen*, HLL 128

The Role of the Nurse in the Preventive Services of a Student Health Clinic . . . *John S. Hathaway*, M.D., *Mary L. Brown*, R.N., and *J. Wister Meigs*, M.D. 137

An Epidemic of *Salmonella typhimurium* Traced to Frozen Egg Whites . . . . . *Morley B. Beckett*, M.D., *John S. Wyman*, M.D., and *William W. Joy* 142

Some Aspects of an Effective Environmental Health Program . . . . . *Herbert M. Bosch*, M.P.H. 150

Psychiatric and Mental Hygiene Services for Colleges and Universities . . . . . *George M. Lott*, M.D., and *Herbert R. Glenn*, M.D. 160

Traumatic Dislocation of the Hip: A Football Injury . . *H. B. Copleman*, M.D. 168

Case Report: Traumatic Hip Dislocation in Football . . *Henry T. Holt*, M.D. 176

Case Report: Myasthenia Gravis . . *Paul F. Tempel*, M.D. 179

Abstracts of Current Literature 183

Student Medicine

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Official Journal of the
American College Health Association

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Editorial Comment

THE PHYSICIAN'S RESPONSIBILITY IN MEDICAL RESEARCH*

EVERYONE will agree that a physician's main responsibility lies in the care of his patients. The best care is given by those who study their problems carefully and develop a habit of enquiry in all that they do. Without the critical application of one's mind to one's work, learning proceeds slowly and imperfectly, and judgment is apt to be fallacious. Accordingly, a research attitude becomes a part of all good medical work.

It is a great mistake to think that the habit of inquiring and the genius for searching are limited to those who devote their lives to organized research work. It is equally wrong to expect a busy physician to make striking advances in knowledge.

It is of first importance that a practicing physician study in a field that he knows; that his projects be concerned with some aspects of his regular work. Practice and study go hand in hand. Active studying stimulates the practitioner, sharpens his powers of observation, throws light on his daily problems, and makes him a better doctor. Good habits of thinking, observing, planning, discriminating, and judging are engendered and nurtured by persistent searching. Their development requires constant application; hence they grow from daily use, any specific research being a concentrated effort in problems that are singled out from one's daily activities.

There are certain practices to be followed and habits to be formed which, if persisted in, commonly facilitate useful investiga-

* A condensation, prepared by the author, from a presentation before the General Session, American College Health Association, Thirty-eighth Annual Meeting, Toronto, April 30, 1960.

tion. One has to do with keeping good records of symptoms, signs, and important observations in concise, clear, and exact language. Another is concerned with thinking and pondering over interesting findings, difficult problems, and striking phenomena. "Real thinking is an acquired skill founded on practice and habit" (Northrop Frye). It leads to clear delineation of problems, which is essential for progress in research. A third necessary discipline is the careful preparation of reports in clear appropriate terms. It opens one's conceptions to exacting scrutiny and shows up the shortcomings and imperfections of observations and impressions.

There are, on the other hand, many influences which hinder research. Perhaps the most deleterious is being too busy to have time to think, too weary and preoccupied to read or wonder. Almost as bad is to think that research can be done easily, that it is a matter of accumulating data from a series of tests and not, as it must be, an active discriminating process in one's mind. The failure to realize the need for hard, disciplined thinking and constant scrutiny of one's observations and deductions is an almost insurmountable handicap. Other retarding influences include the attempt to do so much that little can be accomplished, the deviation of one's efforts to make use of expensive equipment and recording devices that do not help the project, the belief in the necessity of publication regardless of the inherent value of the data, and the desire for the glamor and prestige of research rather than for the interest, pleasure, and satisfaction of searching.

An important false conception, which may lead in the end to serious error and great discouragement, comes from the belief that statistical analysis will extract information leading to reliable conclusions from the raw data of imperfectly controlled studies. A good statistician will know that biological variation, which cannot always be recognized, may render valueless conclusions based on data that appear to be "statistically significant." Especially when there is great individual variation, one must always be wondering whether the conclusions are biologically true. Statistical analysis is no substitute for critical thinking in the initiation and performance of study and in the scrutiny and evaluation of the data.

There are many opportunities for research in any type of prac-

tice, which include studying the "natural course" of disease from its earliest manifestations, modified as it may be by various influences, critical evaluation of newer diagnostic and therapeutic measures, study of physiological variation and definition of that broad zone which lies between the definitely physiological and the clearly pathological, and study of epidemics of all kinds and of minor complaints and minor maladies.

The great contribution of practicing physicians to new knowledge lies not in individual studies but in the advancement of medical knowledge along a broad front. The accumulated good sense of a large body of active, thinking physicians has a wonderful influence. It dampens excessive swings of medical fashion, buffers overly enthusiastic claims for new remedies, made often in the urge to publish early, and acts as the ultimate jury in all clinical trials. The general critical attitude of honest thinking and penetrating doubt on the part of a physician broadens his mind, increases his comprehension, and, by its inherent discipline, raises the standard of all aspects of his practice. His responsibility to himself and his patients is to develop this attitude and exercise it to the extent of his ability. Genuine advancement of medical knowledge comes as an important by-product.

R. F. FARQUHARSON
Nation Research Council, Canada

IS THERE A SUBSTITUTE FOR ENTRANCE PHYSICAL EXAMINATIONS?

MANY physicians have wished for a satisfactory substitute for routine physical examinations, especially when there are large numbers of people to be examined in a short space of time. Such a situation usually exists in colleges and universities at the beginning of each school year. The expenditure of energy and time and the boredom which may be experienced by the physician in doing such examinations often seem to outweigh the benefits gained. The discovery of significant previously unknown disease is infrequent in college students. Also it has been found that line

examinations or other forms of mass examination tend to be unreliable.

Recognition of these and other disadvantages has led to the trial of various other ways of scheduling the physical examinations such as requiring all students to submit a report of a physical examination carried out by their own physician prior to admission, or scheduling the examinations individually spread out over a period of weeks or months after the start of school. There appear to be some drawbacks to any proposed scheme and all require a great deal of some physician's time.

Dr. Hathaway and his associates at Yale University have introduced and studied under controlled conditions an innovation in student health practices by employing a nurse-conducted health interview accompanied by appropriate laboratory screening tests in lieu of routine physical examination of entering freshmen. This procedure was supplemented by medical consultation whenever the nurse felt it was advisable.

In a preliminary report of this study on page 137 Dr. Hathaway and his associates state the belief that such supplemented health interviews appear to be as effective as other procedures which utilize physical examination by a physician and actually in some areas which dealt with student satisfaction were superior.

We will await with interest further reports from this study.

R. W. A.

Malignant Tumors in Young Adults*

LEONA B. YEAGER, M.D., NORTHWESTERN UNIVERSITY, AND WILLIAM B. HANAFORD, M.D., EVANSTON HOSPITAL ASSOCIATION

ON January 6, R came to see me because of poor grades. He was unable to concentrate and recently had been listless and lacked energy. The symptoms were first noticed in the spring quarter, six months previously. A similar episode was recalled during high school years. Recently he had moved on campus, obtained a job working for his board, and was gaining weight. His low grades were in German and chemistry, his favorite subjects.

His appearance was that of a well-built, attractive, alert student, eager to solve this puzzling situation. His manner and expression were energetic. His initial history and the Cornell Medical Index were noncontributory. In answer to the question, "Are your genitals often painful or sore?" "No" was indicated. To the question, "Have you had anything seriously wrong with your genitals?" "No" was marked. A battery of laboratory tests and a physical examination were scheduled.

Three days later R returned for the reports and a physical examination. A chest x-ray had revealed a soft density in the upper lobe. In reviewing his past history two significant items were uncovered: the left testis had been swollen one month previously, becoming quite hard and lumpy, followed by slow resolu-

* Presented before the Section on Medical Service, American College Health Association, Thirty-seventh Annual Meeting, Philadelphia, May 7, 1959.

tion to normal; and lung calcifications had been watched during his early years. The left testis was enlarged. A second-strength Mantoux test was positive. A Friedman test also was positive. Removal of the testis revealed choriocarcinoma. R died February 22, with metastases to brain, lung, and liver, just seven weeks after his initial visit.

This case, whose history is a familiar kind to us all, raised these questions: (1) Are we seeing more malignancies? (2) What sort of neoplasms should be expected in our population? (3) What will bring the students to us earlier? To answer these questions our records over the past twelve years and the literature were examined for the trends of malignancies in young adults.

BACKGROUND AND METHODS OF STUDY

The background is a midwestern university averaging 7,000 students, where the distribution of men to women is 1.75 to 1, of undergraduates to graduate students, 4 to 1; included is a summer session of six weeks, with a somewhat older population. In the postwar years veterans have gradually disappeared from the campus scene. It is estimated that during the period studied, 1947 to 1959, some 40,000 students have been under the care of the student health service.

During this time the student health service has been constant in its operations. Some of the personnel have changed, but seven staff physicians have been in attendance continuously. In 1950 we discontinued initial physical examinations and accepted those performed by family physicians.

This series does not indicate, by any means, a complete case-finding program. In most communities a malignancy will not remain hidden. However, our university operates on a quarter system, and students leave for various reasons and sometimes no further reports are available. The study includes only those students whose symptoms started while they were in school or who came to school with a history of malignancy. Thirty-one cases came to our attention during this period. Of these, twenty-three occurred in young adults. In referring to young adults, the age limits of sixteen to thirty-five years were selected.

MALIGNANT TUMORS

The types of malignancy and sites of origin are indicated in Table 1. The largest number, eight, occurred in the urogenital

Table 1. Malignant tumors classified as to sites of origin, type, and prognosis

System	Organ	Age at onset of symptoms	Sex	Type	Years follow-up
G.U.	Testis	35	M	Embryonal carcinoma	5
	Testis	20	M	Choriocarcinoma	D ½
	Testis	25	M	Malignant teratoma	2
	Epididymis	22	M	Rhabdomyosarcoma	?
	Urinary bladder	19	M	Leiomyosarcoma	1½
	Ovary	21	F	Granulosa cell	D ½
	Ovary	22	F	Papillary cystadenoma	?
	Ovary	18	F	Papillary pseudomucinous carcinoma	D ¼
Bone	Rt. forearm	22	M	Fibrosarcoma	3
	Rt. arm	18	M	Ewing's or reticulum cell sarcoma	D 1
	Spine, lumbosacral	18	M	Osteogenic sarcoma	½
	Rt. humerus	23	M	Chondromatous bone cyst	2
	Thigh	14	M	Fibrosarcoma	D6
	Arm	18	F	Osteogenic sarcoma	19
Lymphatic	Mediastinal glands	32	M	Hodgkin's disease	2
		13	F	Hodgkin's disease	8
	Bone marrow	19	M	Leukemia, myelogenous	D ¼
	Submaxillary glands	25	M	Lymphosarcoma	6
	Cervical glands	21	M	Lymphosarcoma	3
C.N.S.	Meninges	16	F	Recurrent meningioma	D 3
	Brain	46	F	Glioblastoma	D ¼
Miscell.	Thyroid	18	F	Adenocarcinoma	4
	Skin	36	F	Melanosarcoma	4
	Skin	32	M	Malignant melanoma	D 2
	Tonsil	25	M	Epidermoid carcinoma	3
	Thymus	26	M	Malignant thymoma	D 4
	Skin	21	M	Neurogenic sarcoma	3
	Breast	8	M	Malignant (unspecified)	12
	Breast	43	F	Malignant (unspecified)	D 3
	Breast	56	F	Carcinoma	?
	Breast	49	F	Carcinoma	1

D indicates patient died.

system, including three ovarian and three testicular tumors. One case of testicular and two instances of ovarian tumor died in the year of discovery.

Bone tumors accounted for six cases, with two deaths. Five lymphomas were found, with only one case of acute leukemia, who died shortly after diagnosis. This miscellaneous group includes two tumors originating from the nervous system, both fatal. Also thymoma and melanoma have each caused one death. Of twenty-three malignancies in young adults seventeen were sarcomas. This agrees with the usual statement that sarcomas are more frequent in the young.

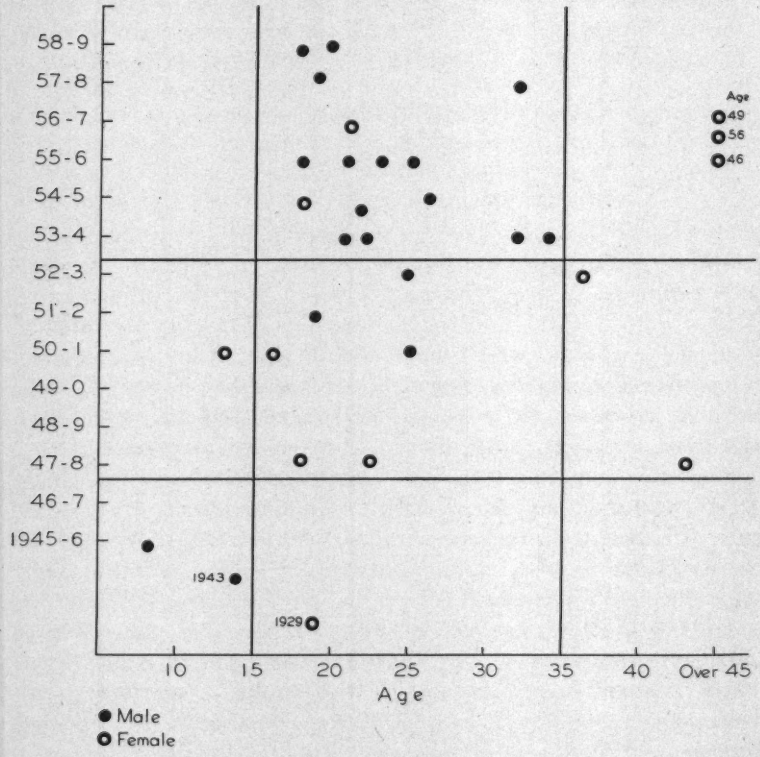

Figure 1. Date and age at onset of initial symptoms

ETIOLOGY

The date of initial symptoms, the sex and age distribution are shown in Figure 1. If the twelve-year period will be divided in half, it is apparent that seven cases were found in the first six years, 1947–1953, and sixteen were detected during 1953–1959. Does this mean increasing incidence of malignancy or better detection?

In the young adult group we have twenty-three tumors, eighteen in males and five in females. If corrected for equal population of men and women we have a preponderance of male incidence of about two to one. Of the twenty-six cases with family history available, seven had a familial malignant history, and five had a familial diabetic history. Based on our previous statistics we would have suspected about 1 per cent to have a familial diabetic history. Preceding injury to the site was reported three times. This is based on retrospective, routine history.

SYMPTOMS AND SIGNS

Table 2 shows the initial symptoms in the genitourinary group, that group of highest incidence. It will be noted that two cases of testicular tumors gave initial history of recurrent swelling of testes with relief of swelling and a consequent delay in reporting symptoms. The ovarian malignancies were ushered in with catastrophic abdominal pain and, in retrospect, nothing in the way of previous historical clues.

The malignant tumors of bones are expected to occur in childhood and early adult life, usually before the age of thirty. They presented symptoms and signs which may be misleading, such as history of indefinite injury, an acute onset, pain at night, a somewhat increased local and general temperature, and leucocytosis.

Patient C.P. complained of lumbosacral back pain. X-rays and physical examination were normal. Back strain was suspected. Supportive treatment gave no relief. Finally, a myelogram revealed an obstruction. Surgery for a suspected disc lesion revealed osteogenic sarcoma.

The tumors of the blood and lymphatic system came to our

Table 2. Initial symptoms of genitourinary tumors

Type and organ	Initial symptoms	Treatment	Comment
Embryonal carcinoma, testis	Recurrent swelling and pain in testis	Excision	Injury treated 20 years previously
Choriocarcinoma, testis	Increase in weight and poor grades (history of testicle swelling and subsiding)	Excision	Positive Ascheim-Zondek test
Teratoma, testis	Lump in scrotum	Excision and radiation	
Rhabdomyosarcoma, epididymis	Swelling of spermatic cord	Excision	Grandmother had cancer
Leiomyosarcoma, urinary bladder	Lower abdominal pain	Excision	
Granulosa cell, ovary	Sudden severe abdominal pain	Excision	Mother had cancer
Papillary cystadenocarcinoma, ovary	Pain in right side of abdomen	Excision and radiation	
Papillary pseudomucinous carcinoma, ovary	Sudden severe abdominal pains	Excision	

attention either because of swelling secondary to vascular obstruction or as an incidental physical finding of a hard lymph gland during examination for other purposes.

The miscellaneous group is characterized by a variety of onsets:

1. A sixteen-year-old girl complained of cervicodorsal pain for two years following a diving board accident. Spinal cord pressure suddenly developed, with motor and sensory defects. Surgical exploration revealed meningioma, which later proved to be a malignant dumbbell type.

2. An eighteen-year-old girl was seen routinely for check as a mumps contact. The submaxillary and anterior cervical lymph nodes were large and firm. It was claimed that these were always under scrutiny. On biopsy, however, a papillary carcinoma of the thyroid was found.

3. A twenty-six-year-old male complained of pain in the left shoulder. Examination revealed edema, secondary to axillary

thrombosis. A mediastinal mass was seen on x-ray, which was diagnosed as malignant thymoma.

4. A twenty-one-year-old male complained of a pimple present for one year on the flank. On excision of this mole, the biopsy diagnosis was neurogenic sarcoma.

5. A student, aged thirty-two, with a traumatic European war background, undergoing psychoanalytical treatment for impotency, complained of swelling of the neck. History revealed a "wart" had been removed two years previously for cosmetic reasons. Biopsy showed a metastic melanoma.

6. A twenty-five-year-old male complained of sore throat, fatigue, and fever. Unilateral exudative tonsillitis was present. On subsidence of the infection the right tonsil remained enlarged. On palpation it was hard and firm. Tonsillectomy revealed epidermoid carcinoma.

The following cases do not fit into our arbitrary young adult group but include the following:

7. A woman admitted to the University with a history of previously treated melanosarcoma at the age of thirty-six.

8. Two women were admitted to the University with a history of breast cancer developing at the age of fifty-six and forty-three years.

9. A forty-five-year-old widow with glioblastoma of the temporal lobe complained of emotional instability, disorganization, and acute onset of speech defects.

10. A forty-nine-year-old female complained of bleeding of the right nipple. On surgical excision a breast carcinoma was found.

11. An eighteen-year-old male was admitted to the University with a history of having had a lump in the breast removed at eight years of age. This was malignant and was treated with x-ray therapy. He has been well for twelve years.

COMMENTS

Our population is different from the older age group and from children in that the higher cancer potential tissues in young adults according to this small series are: (1) gonads, (2) bones, (3) lymphatics. In Lindsey's study of cancer incidence in the U.S. Army

(25-to-29-year age group) lymphomas and tumors of genitals and skin were most often found.[1] Dorn states: "The achievement of sexual maturity is followed by an increase in incidence of malignant tumors rising in embryonal and mixed tissues—in the ovary in females and in the testes in males." [2]

As student health service physicians we should (1) pay attention to symptoms referable to the gonads, (2) listen carefully to symptoms of bone pain, especially night pain, being particularly careful if there is an uncertain history of injury, (3) on physical examination, chart the size and consistency of lymph glands, spleen, and liver for comparative follow-up, (4) view with suspicion all nevi in critical areas, and (5) perhaps be cautious when there is a familial history of carcinoma or of diabetes.

Health education for young adults should be geared to these trends with emphasis on:

1. Inspection and examination of testes;
2. Periodic pelvic examination of young adult females;
3. Attention to bone pain and bone symptoms.

A review of the causes of death in our student group during the period studied showed that malignancy ranked second in frequency. Accidents were first with twelve fatalities, malignancy with nine, suicide seven, and five deaths from other causes. Our series is too small for statistical evaluation. However, this ranking has been substantiated by Dorn and by Collins, who reported the following death rates for the fifteen-to-twenty-four-year group: accidents 54.6, malignancies 6.8, tuberculosis 5.6, suicide 4.7 per 100,000.[3] The trend toward increasing incidence in the latter half of this study needs exploration. Burnett in searching for the cause of increased leukemia urges careful exploration for mutagenic substances.[4] It is appropriate that student health services develop a tumor registry with a careful recall system. A cooperative program for many universities would provide more in-

[1] D. Lindsey and E. M. Cohart, Incidence of Cancer in American Males, *Cancer, 9:* 1059–1062, 1956.

[2] H. F. Dorn, The Changing Incidence of Cancer throughout Life, *Bull. N.Y. Acad. Med., 31:* 717–725, 1955.

[3] Dorn, *op. cit.;* S. D. Collins, *Major Causes of Illness and Medical Care with Especial Reference to Long-Time Trends* (Washington, D.C.: Govt. Print. Off., 1957).

[4] M. Burnett, Leukemia as a Problem in Preventive Medicine, *New Engl. J. Med., 259:* 423–431, 1958.

formation on these trends. Malignancy can happen to young adults. It may be deadly. It must be found early.

CONCLUSIONS

Thirty-one cases of malignant tumors in a college population were reviewed over a twelve-year period revealing: (1) a trend toward increased incidence during the past six years; (2) higher incidence in males; (3) the urogenital, osseous, and lymphatic systems were most commonly involved; (4) initial symptoms and signs are unpredictable in this age group; (5) cancer education should be revised for young adults; and (6) further study of associated familial diabetic history is desirable.

University Students' Dental Health Service in Finland: History, Organization, Program, and Finances—A Brief Review

AIMO V. RANTANEN, HLL,*
UNIVERSITY OF HELSINKI

THE origins of the Finnish student health service date back to 1932, when under the auspices of the Finnish National Anti-tuberculosis Association Dr. Göta Tingvald in Helsinki began to conduct tuberculosis examinations among university students. During the same decade the National Union of Finnish University Students (N.U.S.) planned and initiated a number of social organizations, which in time evolved into the present-day agencies for housing, employment, practical training, student exchange, foreign travel, and health. The last mentioned has doubtless been one of the most beneficial to the student body as a whole. The independent development of this service is due to the initiative taken by the youthful elected representatives of the National Union of Students and to the self-governing character of that organization, thanks to which the necessary innovations could be made without delay. The pioneers working in this direction were many, noteworthy among them Professor Eino Saari, former

* Director of Students' Dental Health Service, Lecturer in Operative Dentistry, Institute of Dentistry.

Minister of Social Affairs, and Dr. Eero Manner, LL.D., both of whom served as president of the N.U.S. for many years, as well as Dr. Kari Savonen, Director of the Finnish Students' Health Foundation. He also holds the office of the chief physician.

It did not take long for the experts and student leaders to realize that purely voluntary programs were inadequate. Therefore, legislation making tuberculosis examinations obligatory for students on the university level in Helsinki was enacted in 1947. Supplementary legislation passed in 1958 makes an annual tuberculosis examination compulsory for every enrolled university student in Finland.

In 1946 the health program was completely revised by the N.U.S. and the Student Health Center established; this in turn was reorganized in 1954, with the establishment of an independent Student Health Foundation. This foundation has continued to maintain and develop further the previously established facilities on an official and programmatic basis. Its Council includes a given number of representatives from official health organizations, the university faculties of medicine, and institutions of higher education as well as an equal number of student representatives. The program drawn up by the smaller Executive Board, elected by the same principals, is applied on the practical level by the six local health stations. One of these is the Students' Dental Health Center in Helsinki.

Discussions relating to dental treatment for university students go back to the earliest planning stages of the movement to establish organized facilities for the care of students' health. It ranged from individual complaints to formal articles in the student journal, *Ylioppilaslehti*, before World War II and to programmatic declarations issued on the occasion of the thirtieth anniversary meeting of the N.U.S. in 1951.

A committee under the chairmanship of Professor Juuso Kivimäki was set up in 1949 to plan a dental service for registered university students. The dental health situation was then surveyed by examining the teeth of more than 2,200 freshmen. This survey, conducted by the author, provided a reliable factual basis on which to carry out the plans. Professor Niilo Pesonen, M.D., Director of the State Medical Board, has provided most valuable

support as President of the Council during the formative years of the Students' Dental Health Service. During the same period, Mr. Urpo Ratia, Chairman of the Executive Board, has contributed toward the implementation of the following students' dental health program.

The first patients were admitted to the Students' Dental Health Center in Helsinki at the beginning of 1955. During the first two years there were only two consulting rooms, and the staff consisted of four dentists and three nurses. A third consulting room was added in 1957 and a fourth, finally, in 1958. The problem of space has continued to be one of the most serious obstacles to the further development of the Center. The sphere of the Student Health Foundation gradually expanded so as to include all the cities with institutions of higher learning at the beginning of 1957. In line with this development, centers for dental care were also established in Jyväskylä (central Finland), in Turku (western seaboard), and, most recently, in Oulu (northwestern coast).

The basic program adhered to at the Students' Dental Health Centers is strongly conservative. It includes:

1. Education in oral hygiene, especially preventive individual care. The methods take the form of articles published in the student press, lectures, and pamphlets.
2. Operative dentistry, endodontia, and peridontia.
3. Exodontia, only when imperative.
4. Minor oral surgery which includes surgical removal of impacted teeth and the like. More complicated surgical and orthodontic cases as well as prosthetic work of less urgent nature, until now, have been referred to private specialists.
5. Crown and bridge work, as well as removable, partial, or full dentures in the case of patients who have received root-canal treatment at the Center and who require urgent treatment without delay for special, social, or medical reasons.
6. The result of dental studies and organizational experience gained at the Center are published. A list is available on request.

As a matter of principle the patients of the Center are not subjected to experiments of any kind, nor used as objects for any teaching purposes.

The Students' Dental Health Centers, situated in Helsinki and

Turku, are quite uniformly equipped, which is a great advantage from the standpoint of servicing and so on. Every reception room has a Siemens Artifex Unit, each with an x-ray tube, a Premier-Narkos dental chair, and a totally automatic Elra hot-air sterilizing apparatus. Furthermore, the furnishings include a spacious instrument cabinet and a sufficiency of other storage room. Efforts were made to standardize the collection of instruments as well as the supply of medicines to be as efficient as possible. The personnel can, in case of need, move over from one reception room to another, too, without any loss of time in becoming accustomed to new conditions (Figure 1).

Among drugs, the following anesthetics are used: Xylocain-Exadrin, Astra, Hostacain Spezial N-arterenol, Hoechst, and ABC, Bayer. In the treatment of infected root canals, the program of the Department for Operative Dentistry of the Institute of Dentistry of the University of Helsinki has been followed. The antibiotic locally used for root-canal treatment is a Neomycin-Bacitracin combination in aqueous suspension. Biocalc, a pure calcium hydroxide preparation, is also in use. The disinfecting solution used to cleanse the equipment is 70 per cent isopropyl alcohol. No undeclared, so-called patent medicines are included in our stocks.

From the beginning of 1958 eight dental surgeons have been in the service of the Students' Dental Health Center in Helsinki. Four of them serve four hours, and the other four, two and a half hours daily; the staff is on duty some 200 workdays a year, totaling about 4,600 man-hours.

The majority of the dentists fulfill the postgraduate specialization requirements of the Department for Operative Dentistry of the Institute of Dentistry after no less than three years' service. Generally, those accepted for regular positions have served in the department twice the length of time mentioned. This, in turn, promotes to a notable extent uniformity of therapeutic measures, with special emphasis being laid on operative dentistry and upon endodontics.

The patients of the Students' Dental Health Center in Helsinki are students enrolled in the seven institutions of higher learning. Table 1 indicates the total enrollments at the beginning of 1958

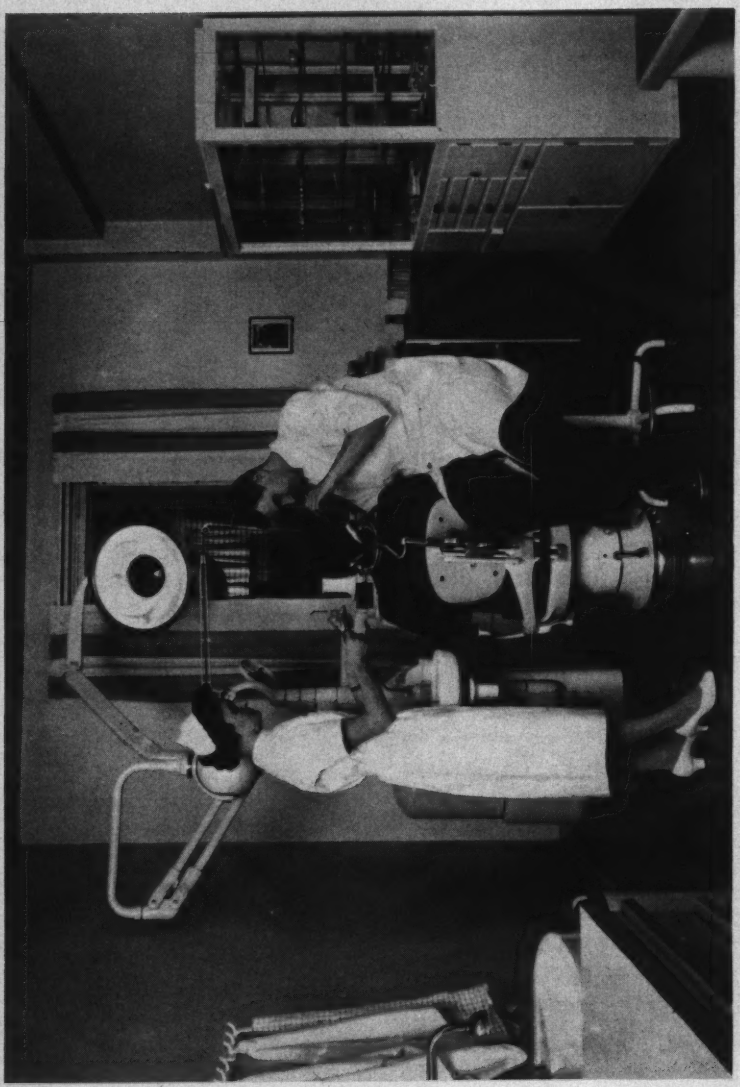

Figure 1. Consulting room at the Students' Dental Health Center in Helsinki

Table 1. Distribution of students and dental patients in Helsinki, 1958

Institutions	Students	Patients	% of all patients	% of all students
University of Helsinki	10,312	1,910	68.2	18.5
Institute of Commerce and Business Administration	1,075	218	7.8	20.3
Institute of Technology	2,215	525	18.7	23.7
Swedish Institute of Commerce and Business Administration	334	26	0.9	7.6
Institute of Social Sciences	249	28	1.0	11.2
Teachers' College of Helsinki	240	48	1.7	20.0
Veterinary Institute	86	11	0.4	12.8
Others (Staff)	—	34	1.3	—
Total	14,521	2,800	100.0	19.3

and the cumulative number of patients from each of these schools.

Table 2 indicates the growth of the Center during the years 1955–1959.

This center is situated centrally at the Domus Academica, the complex of student dormitory buildings maintained and owned by the Students' Union of Helsinki University. A plan of the quarters occupied by the Center is sketched in Figure 2. These premises are temporary, and a special Students' Dental Health Center is planned for the future.

Table 2. The growth of the Students' Dental Health Center in Helsinki and the distribution of various treatments given in the period 1955–1959

	1955	1956	1957	1958	1959
Patients	956	1072	1309	1637	1908
Visits	5,239	6,822	8,913	11,481	11,726
Distribution of treatments:					
Fillings (no. of teeth)	2,521	4,121	5,951	8,029	8,808
Removals (no. of teeth)	476	562	719	796	701
Root fillings (no. of teeth)	202	257	288	459	444
Other treatments	2,647	3,567	4,364	5,477	4,561
Total single treatments	5,846	8,507	11,322	14,761	14,514

The foundation is supported by the compulsory students' health fees to the Student Health Foundation, by patients' fees, by aids from the government and institutions of higher learning, and by private donations.

Finnish students come from all walks of life and all strata of society and are largely self-supporting or dependent on student loans. A special effort, therefore, has been made to provide dental

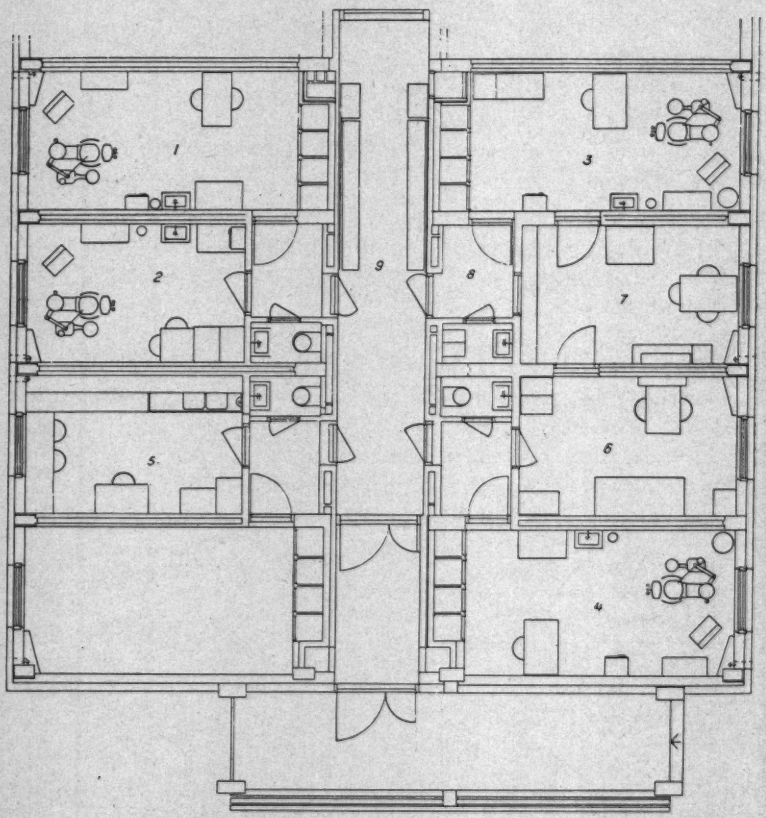

Figure 2. A plan of the Center in Helsinki: 1, 2, 3, 4—consulting rooms; 5—laboratory; 6—reception and files; 7—office and library; 8—dark-room; 9—waiting room

care at as reasonable a cost as possible so that every student needing treatment may receive it. Payment is made on each visit in advance for the next appointment. The rate is 500 Finnmarks, which roughly corresponds to the price of two cinema tickets or fourteen streetcar rides. Compared to the rates charged by private practitioners, Students' Dental Health Center is about 50 per cent cheaper. More complicated operations, root-canal treatments, surgical removals of teeth, and so on, which consume more man-hours than usual, are charged for on an hourly basis. Additional fees are charged for technical laboratory work and for materials, as in the case of Richmond and gold crowns, fixed bridges, removable dentures, and the like.

The fees paid by patients on a per visit basis constitute the largest part of the income of the Students' Dental Health Center. Aside from capital investments (basic equipment), most of the expenses of the Center are covered by its own funds, as shown in Table 3.

The investments during the years in question amount to over five million Finnmarks (U.S. $16,000), a sum covered solely by grants.

The responsibility of society toward the individual has been stressed in the Scandinavian countries since the turn of the century. In line with this general trend, various factors contributed: a severe climate, the lack of natural resources, and, especially in Finland, war. Numerous social services resulted, among them

Table 3. Distribution of annual expenses and percentages of annual income

Annual expenses in %	1955	1956	1957	1958	1959
Investments (basic equipment)	46.8	22.7	19.2	2.6	1.2
Other expenditures:					
Salaries	39.8	65.6	70.2	80.8	84.0
Supplies	6.2	5.9	5.1	11.3	4.9
Overhead	7.2	5.8	5.5	5.3	9.9
Percentage paid:					
from income	51.2	79.7	71.0	78.9	64.3
from other sources	48.8	20.3	29.0	21.1	35.7

health centers maintained for diverse purposes and among diverse groups. Thus the Student Health Foundation, which includes the Students' Dental Health Program, is to be considered as an effort to preserve our nation's most valuable resource, the health of its academic youth.

The Role of the Nurse in the Preventive Services of a Student Health Clinic— I: A Preliminary Report*

JOHN S. HATHAWAY, M.D., MARY L. BROWN, R.N., M.A., AND J. WISTER MEIGS, M.D.,
YALE UNIVERSITY

THIS is a report on the first phase of a five-year study of the nurse's role in the preventive aspects of a comprehensive health-care program for Yale University students. The question under consideration is what specific contributions a nurse with appropriate postgraduate training or experience can make in a student health service. The first activity selected for study was a nurse-conducted health interview as one of the procedures used in a routine health survey.

The following assumptions were made as a basis for initiating the health interview: (1) Routine physical examinations as usually performed on large groups of presumably healthy individuals have not proved to be as productive of further action on the part of the person who has had the examination as is considered pos-

* The costs of this project have been defrayed in part by a research grant from the Nursing Resources Division of the U.S.P.H. Service. Acknowledgment is made of the co-operation and assistance of members of this and other departments in planning and conducting these studies.

sible or desirable. (2) Physicians, usually facing a heavy daily schedule, and oriented toward diagnosis and treatment of more overt, serious conditions are rarely prepared to meet the demands of patients who are not ill in the usual sense of that word. Physicians are accustomed to giving only a small proportion of their time to what might be described as permissive health advice or counseling. Furthermore, it may not be desirable for physicians to carry more than a small part of such a counseling load. Nurses with public health preparation or other similar training and experience are both professionally oriented and emotionally directed toward the preventive health practice opportunities afforded in this type of relationship.

In addition, some general assumptions were made in formulating the study, namely: (*a*) When the financial barrier is removed from the patient-physician relationship, patients will seek health advice for minor health deviations rarely seen by the physician in the usual fee-for-service practice, and responsibility for care of such minor problems might be delegated, under proper supervision, to other members of the health team. (*b*) Such group action in the health field requires close co-ordination and communication between the various professions engaged in it, especially between nurses and physicians. (*c*) Expansion of the nurse's responsibilities will require revision of present concepts of what nursing is, what medicine is, and what good health practices are—or should be in the future. (*d*) Each discipline in any health service needs to retain its own identity (e.g., nursing, medicine, social work, health education) and still operate as part of a team.

The use of a nurse in obtaining health histories is certainly not new. This has extended at times to taking such histories on presumably healthy individuals. Thus, for younger job applicants, the Metropolitan Life Insurance Company uses a nurse-conducted interview plus laboratory screening procedures to replace the employment physical examination.[1]

We believe, however, that the Yale Research Project is the first time that the contribution of a nurse-conducted health interview as a substitute for, or a supplement to, a routine physical

[1] K. J. Thompson and M. Sinnott, Health Interviews, *Amer. Ass. Industr. Nurs. J.*, *4:* 5, 1956.

examination has been studied under conditions allowing for comparison with control groups, and permitting on-going study of the individuals subjected to this procedure.

METHOD OF STUDY

The study is based on existing procedure in the health service. Every freshman has a health evaluation. Formerly, these students had their examinations under three different scheduling systems and by two different examining procedures. (*a*) Candidates for the freshman football team received their physical examinations on a single afternoon during the week before the beginning of the fall term. These were done by a team of physicians and assistants assigned to stations covering different aspects of the examination. (*b*) Freshmen whose health forms (submitted by all students before coming to Yale) indicated that they had a problem requiring early health supervision were scheduled ahead of the rest of the class, in an "early physical" group. Each early examination was performed by one physician, followed, if indicated, by referral to the appropriate clinic for further care. This early group was usually completed by mid-November. (*c*) The remainder of the class had an examination similar to the "early" group, with a scheduling period extending until completion of the class surveys by mid-February. *All* freshmen had, as a part of their physical evaluation, a visual acuity test, a chest x-ray, and a urinalysis.

For the first two years of this study, the freshman classes of about 1,000 per year, young men of a median age of 18 years, were divided into two groups. The first group included the football candidates and those scheduled for "early physicals" as described above. Each year there were about 200 individuals in Group I.

The second group consisted of the remaining 800 freshmen in each class. Each year 300 individuals were selected at random from these 800. All of these 300 received chest x-rays, urinalyses and visual acuity tests. Two hundred of the 300 received a nurse-conducted health interview. After this interview, 100 of this group of 200 were routinely scheduled for physical examination (or referral to a physician), while the other half did not receive a physical examination unless specifically recommended by the

nurse interviewer. Although the nurses were aware of the general study design, the individuals scheduled for routine physical examination were not known to them at the time of the interview. Immediately following each interview, the nurse made recommendations and referrals based on the information gleaned during the interview.

The final group of 100 of the 300 selected at random received the routine examination customary in previous years, and served as the control group (representative of the 600 remainder of the class) in comparative studies of the three survey methods.

At the end of each year, the 300 individuals in this study group were asked to complete questionnaires regarding their attitudes toward their health survey and health service in general, in terms of knowledge of services available to them, of feeling that those involved indicated a personal interest toward them, of general satisfaction in services offered, and so on.

The department health records of this group were analyzed with particular attention to two aspects: (1) chronic or potentially recurring health conditions discovered before, during, or after the health survey, and (2) degree of individual use of the health services.

DISCUSSION

The questionnaire and health-record findings will be the subject of future reports, as well as other studies pertaining to the general structure of the health interview. The initial studies indicate that there are no significant differences between the three types of health survey used with regard to health findings of an apparently chronic nature first becoming a matter of health service record after the health survey had been completed. Such "late" findings, considered as *possibly* overlooked during the survey, occurred no more frequently in students whose health status was explored by means of a nurse health interview without physical examination than in those students examined by the standard procedure.

On the other hand, there seemed to be measurable advantages of the health interview by a nurse. Analyses of questionnaires

showed that students receiving nurse-conducted health interviews were more apt to feel that they had had ample opportunity to discuss their health problems, that the survey personnel were interested in them as individuals, and were more apt to be satisfied with the services they had received during the year.

An important contribution to the conduct of the study has been made by a Research Study Committee composed of a nurse-consultant, an internist, a psychiatrist, a sociologist, a biostatistician, a physician and teacher in occupational health, and the physician administrator. The general functions of the committee have been to assist in defining the processes under study, in determining the adequacy of the recommendations made by the nurse-interviewers, and in integrating their activity into the work of the various divisions of the health service. This has involved active participation of the committee members in designing substudies and in working with the nurse in clarifying the interview process and the dynamics of the interview as a health survey method. Their study of individual case reports has focused attention on the methods of research as well as on proper handling of specific problems uncovered by health interviews.

CONCLUSION

We believe that nurse-conducted health interviews make valuable contributions in a routine health survey. The nurse serves in the role of a competent and interested health worker with time to listen to the student and with the training needed to help him sort out his health problems and to make plans for dealing with them.

Under certain conditions such health interviews may substitute adequately for a routine physical examination. Such substitution appears feasible from our experience *for the age group we have studied when accompanied by laboratory screening tests and when ready access to adequate medical consultation is available.*

An Epidemic of *Salmonella typhimurium* Traced to Frozen Egg Whites*

MORLEY B. BECKETT, M.D., JOHN S. WYMAN, M.D., AND WILLIAM W. JOY, UNIVERSITY OF MICHIGAN

I

DR. WYMAN, Mr. Joy, and I will attempt to portray the story of an epidemic of food poisoning which was pinpointed to frozen egg whites. We have not been able to find in the literature an epidemic of this proportion which could be traced to this cause. It has long been recognized that frozen egg whites are a dangerous potential source of infection. Normally they are not the cause of epidemics, because they are sufficiently cooked to destroy any bacterial contaminant, but in this incident our environmental health personnel, through ingenious devices, were able to prove the possibility of retained bacterial viability even after what was considered to be a cooking process.

On Sunday morning, November 9, 1958, I received a call from a Health Service physician on duty that he had already seen nine students, all complaining of fever, diarrhea, vomiting, headache, and abdominal cramps. He noted that all of these students were residents of South Quadrangle, which is a university residence hall. There are about twelve hundred students in

* Presented before the Section on Clinical Medicine, American College Health Association, Thirty-eighth Annual Meeting, Toronto, April 28, 1960. Part I is by Dr. Beckett, Part II by Dr. Wyman, and Part III by Mr. Joy.

this residence, and they are all served from one kitchen. Within two hours we had called to duty several more of our clinic physicians, our environmental health staff, and laboratory personnel. Students continued to pour in all day, and a quick check showed a great many more still in residence who were complaining of the same symptoms. The sanitarians obtained menus for the previous Wednesday through Saturday and had these mimeographed as questionnaires within a few hours. The outbreak was explosive, the great majority of cases occurring in the first forty-eight hours, indicating that food or drink consumed within the past forty-eight hours contained the causative agent. The fact that all cases were confined to South Quadrangle eliminated milk or water except for peculiarity of handling within the one building and no water trouble had occurred which could cause a back siphonage. Food certainly seemed the most likely possibility. Quick perusal of all questionnaires returned by Monday night pointed most strongly to a meringue cream pie which had been served to all on Friday night and then to a few on Saturday night. In the meantime, stool samples had been or were being collected from all patients and food-handling personnel. Dr. Wyman, who is Director of the General Medical Clinic of the Health Service, will discuss in Part II the clinical manifestations and some of the more severe cases. Mr. Joy, who is in charge of our Environmental Health Department, will discuss in Part III the techniques employed in pinpointing the exact source of the infection.

II

From the clinical standpoint, on Sunday, November 9, 1958, we were faced with the problem of dealing with over two hundred students who had suddenly become acutely ill with gastroenteritis of varying degrees of severity. A survey visit with the house mothers and resident advisors of the eight individual houses of the South Quadrangle and brief interviews and examinations of a few students in each house gave us a general picture of the situation. Twenty to fifty students were ill in each of the eight houses. Within two hours we distributed to each house mother mimeographed

instructions and some simple medications for symptomatic relief of patients' symptoms, and we specifically instructed those in charge to send to the Health Service for admission those patients who were not getting along well or who for any reason gave them special concern.

Actually the final report indicated that 268 students were ill to some degree. Of this number, forty-five of the more acutely ill were admitted for management at the Health Service, where they were hospitalized for from one to ten days. The average hospital stay was three and one-half days.

The symptoms of these hospitalized patients included fever, diarrhea, abdominal cramps, and headache, which were also seen in the milder cases. There was also a high incidence of nausea and vomiting and of systemic manifestations, such as weakness and malaise. Vomiting and diarrhea led to evidence of dehydration in over one-third of the hospitalized patients. Almost half (47 per cent) showed diffuse abdominal tenderness, while almost one-quarter showed localization of the tenderness, and in one-fifth rebound tenderness was noted. In seven patients interpretation of these abdominal signs was difficult enough to require surgical consultations. This interpretation was made more difficult by elevation of the white blood count over 10,000 in almost one-half of the thirty-four cases in which it was determined.

Two patients were transferred to the surgical service because of the possibility of appendicitis, and appendectomy was performed on one. The appendix appeared moderately inflamed. Microscopic examination showed localized appendicitis. *Salmonella typhimurium* were cultured from each of three stools of this patient, and it is not clear whether this represented specific *Salmonella typhimurium* appendicitis or a coincidental nonspecific appendicitis. The second case transferred to the surgical service of the University Hospital was not operated on, but it is reported in detail to picture further the close resemblance to acute appendicitis in this fairly severe case:

(R.M.P.)—This eighteen-year-old University of Michigan student was admitted to this hospital on transfer from the Student Health Service on November 11, 1958. His story was one of severe diarrhea since two

days prior to admission. At about 7:00 P.M. that day the patient had the onset of lower abdominal cramping pain in the midline, associated with chills and fever of 104 degrees. The patient was hospitalized at the Student Health Service, fed clear liquids, and given narcotics for his pain. He had some diarrhea, some increase in abdominal pain, but he had no associated nausea or vomiting. This was the first episode of this nature experienced by this student, and he was one of many other similar cases apparently arising from some kind of food poisoning in his dormitory.

On admission, the patient presented a picture of moderately severe dehydration, had fever of 101.4 degrees, and on examination his abdomen was relatively flat, with diffuse tenderness in both left lower quadrant and right lower quadrant, seemingly more marked on the right, with positive rebound tenderness on the right. He had hyperactive bowel sounds and moderate rectal tenderness on the right.

His white blood counts at the Student Health Service had ranged from 12,000 on November 10, 1958, to 16,000 early on November 11, 1958, and 15,000 late on the eleventh. On admission, November 11, 1958, his white blood count was 12,700 with a normal differential. Hemoglobin was 16.4 grams, and the urinalysis was negative. A repeat white blood count on November 12, 1958, was 10,850, and once again the differential was normal.

On admission this patient was confined to bed and given nothing by mouth. He was given parenteral fluids and observed closely. The working diagnosis was: "Gastroenteritis; rule out possible appendicitis." The morning following admission, his abdominal pain had subsided, his fever was down to 100 degrees orally, and he felt markedly improved. He was again given an intravenous feeding of 1,000 milliliters of dextrose 5 per cent in 0.2 per cent saline, and a stool culture was obtained. Late in the day of November 12, oral feedings were begun with clear liquids, and it was felt that this patient did in fact have gastroenteritis and not appendicitis. Accordingly, he was transferred back to the Student Health Service for further observation and follow-up.

Another complication may have been gastrointestinal hemorrhage. In one patient diarrhea was accompanied by a hemoglobin of 8.6 grams per cent. His hemoglobin had been 14 grams per cent less than six months before, but tarry stools were not noted, and stools at the time of admission were guaiac negative. His symptoms of weakness, dizziness, and postural hypotension could have been due either to acute bleeding or salmonellosis.

Diagnosis was established by finding *Salmonella typhimurium* in the stools of sixteen of the seventeen hospitalized patients on whom stool cultures were performed.

Agglutination tests were positive for *Salmonella typhimurium*, in a titer of 1:640 or greater in all six patients in whom they were measured. Cross agglutination with *Salmonella paratyphi* was present, in all six, in titers ranging from 1:80 to 1:640.

Treatment included fluids, both oral and intravenous, and medications to relieve abdominal pain and diarrhea (such as atropine, paregoric and bismuth, Demerol, and codeine.) The organism was sensitive to chloramphenicol, tetracycline, oxytetracycline, and somewhat sensitive to dihydrostreptomycin. However, the hospital stay of the eleven patients treated with chloramphenicol was essentially the same as that of patients who received no antibiotic, and there was no clear evidence of benefit from the antibiotic.

In summary, an explosive epidemic of *Salmonella typhimurium* is reported. Two hundred sixty-eight university students became ill, two hundred sixty-two of them within a forty-eight hour period, with gastrointestinal symptoms, which required hospitalization of forty-five. In addition to nausea, vomiting, diarrhea, abdominal cramps, and systemic manifestations such as fever, headache, weakness, and malaise, seven patients required surgical consultation and two were transferred to a surgical service. One required appendectomy, although it is not clear whether this was *Salmonella* appendicitis or concurrent nonspecific appendicitis.

Stool cultures were positive for *Salmonella typhimurium* in sixteen of seventeen patients. Agglutinations for *Salmonella typhimurium* were found in titers of 1:640 or more in sera from six of six patients, while cross agglutination for *Salmonella paratyphi* was present in six of six in titers of 1:640 or less.

Mr. Joy will conclude the story of this epidemic with his description of the techniques employed to determine the source of the outbreak.

III

As Dr. Beckett has indicated, an immediate effort was made to determine if this was a localized outbreak and to strive to

identify the source of the epidemic. A quick check indicated none of the other twelve residence halls in the university system had reported any unusual illness among students in their charge. There had been no known interruption in the water supply, which is obtained from the city of Ann Arbor. A chlorine residual of 0.2 p.p.m. was noted. Analysis of samples of water in the Michigan Department of Health laboratories yielded satisfactory results. Subsequent investigation disclosed the fact there had been repairs to the water mains in the vicinity during the week previous to the outbreak. The repairs did not take place on the water main which serves South Quadrangle. The milk was obtained from the same source as that used elsewhere on campus. At South Quadrangle it was served in an identical manner at four separate serving lines by means of dispensers. Illness occurred in approximately the same proportion in persons served from all four serving lines.

The explosiveness of the outbreak indicated a single source of infection, probably food. A questionnaire was prepared during the afternoon of November 9, 1958, and delivered to the residence halls for distribution and completion.

Information requested on the questionnaire included; name, room number, time of onset, attendance at football game, symptoms, menus for preceding four days, and food eaten at locations other than residence hall. The students admitted to the infirmary were interviewed upon admission. Stool specimens were also obtained and eventually were found to be positive for *Salmonella typhimurium* in every case. The food considered to be the most likely suspect was the coconut cream pie.

All food-service employees were interviewed. Their personal health histories were obtained, together with their recollection of how the foods were prepared. Frozen egg whites were used as an ingredient in the meringue topping of the pies. The meringue was placed on the pies to a depth of three-eights to one-half of an inch and then placed in a 350-degree oven for browning (baker estimated this took twelve to fifteen minutes), removed from the oven, and placed in the refrigerator for cooling. The pies were removed from the refrigerator, cut, and placed on the serving line. These methods constitute good practice, and no fault was found with them.

A theory was advanced that the egg whites, as received from the processor, were infected. All of the frozen egg whites on campus had been confiscated soon after the outbreak occurred. *Salmonella typhimurium* organisms were isolated from duplicate samples of egg whites analyzed in the Health Service and Michigan Department of Health laboratories. These findings were later confirmed by an independent laboratory.

An experiment was conducted using thermocouples. This consisted of browning the meringue on a pie in essentially the same manner as that used in the preparation of the pies in question. It is interesting to note that the temperature of the meringue did not exceed 104 degrees F. at its point of juncture with the pie.

The interviews with the bakers indicated the egg whites had been thawed by leaving them at room temperature for approximately nineteen hours. Consideration was given the possibility that the temperature at certain points in the thawing egg whites might have risen during the thawing process sufficiently high to encourage bacterial multiplication. By the use of a potentiometer it was found that at no time in the thawing of the egg whites did the temperature rise above refrigeration temperature (45 degrees) during a period of twenty-two hours. It was concluded that gross multiplication did not occur during the thawing process.

All information and data on the epidemic were reviewed by an epidemologist from the Michigan Department of Health. He was in full accord with the conclusions that the food infection was *Salmonella typhimurium* and was caused by frozen egg whites. He requested that stool specimens from all food service employees be submitted to the Michigan Department of Health laboratories for analysis. Anyone submitting a positive stool specimen would be required to submit three negative specimens before returning to work in the food-service area. Of the initial 194 stool specimens collected from student and full-time food-service employees 65 per cent were positive for *Salmonella typhimurium*. All but four of the persons with positive stool specimens had eaten the pie. These four did have close contact with the pie at some time during preparation and service. One person had cut and served the pie, a second had handled the dishes on which it was served, a third, the baker, had broken up the frozen clump of unused egg whites

and pushed them down the drain with his hand, and the fourth, a cook, had rearranged the leftover pie while it was in storage in the refrigerator. None of these persons showed clinical signs of the illness. Several other persons who submitted positive stool specimens did not show clinical signs.

The carrier state persisted in most cases less than ten weeks without treatment, but in one patient persisted for twenty-seven weeks, in spite of two weeks of treatment with chloramphenicol.

The fact that secondary cases did not occur is attributed to the isolation techniques which were established in the residence hall within eight hours of the time the investigation was started.

In conclusion, this food-borne disease outbreak illustrates (1) the possibility of the transmission of *Salmonella typhimurium* by means of frozen egg whites, (2) the fact that browning of a meringue does not produce sufficient heat to destroy pathogens it may contain, (3) the need for additional research in the thawing of frozen foods, and (4) the need to develop an economical, efficient method of pasteurization of egg whites which are to be frozen. Needless to say, we have discontinued the use of frozen egg whites. We have substituted fresh eggs. We are searching for a satisfactory substitute for egg whites. To date, the products we have tested have been free from contamination but do not yield the results the bakers desire.

Some Aspects of an Effective Environmental Health Program*

HERBERT M. BOSCH, M.P.H.,
UNIVERSITY OF MINNESOTA

IN accepting your kind invitation to address your Association I am aware of the honor which you have bestowed on me in giving me the privilege of your floor. While I am not on the staff of a college health service, I do have a great interest in the subject of college health. From a very personal standpoint I am interested since as a faculty member I am the beneficiary of the excellent program provided by the University Health Service of my own university. As a staff member in a School of Public Health I am greatly interested because I recognize the public health teaching value of a university health service that has a comprehensive program. As a professional health worker and as one who has retained his interest in operating programs and as a member for some years of a state board of health, I am interested in college health services as true examples of a local health service. Finally as one who has spent a part of his career in international health work and who retains an active interest in the field of international health, I recognize the unique role which the college health physician plays in the field of international health.

* Presented before the General Session, American College Health Association, Thirty-eighth Annual Meeting, Toronto, April 27, 1960.

ENVIRONMENTAL HEALTH PROGRAM

Many of you will remember, I am sure, the remarks of Dr. Frances Kupperman Herwig of Kent State University before your Philadelphia meeting in 1959. You will recall that she stated that the physician in a university health center in the course of his daily duties can be an "ambassador of peace." She pointed out that, although the 101 foreign students on the Kent College campus represented a very small minority of the 7,000 students enrolled in the college, these students represented forty-four countries in the world:

> A look at a map of the world brought recognition of the unprecedented opportunity presented by this group. Here on our campus were students and scholars who represented one and one-half billion people. Not only were they good-will messengers from their countries to us, but if enlisted as "ambassadors of health" by us they could on their return to their lands disseminate our knowledge of health and perhaps preach the doctrine that "health in man is peace in man." So is it in nations; "health in a nation means peace in that nation." [1]

In this discussion I shall use the term "environmental health" rather than the terms "environmental sanitation" of "hygiene." Although the latter two terms are perfectly good, they are more nearly bound to a traditional concept. When "environmental sanitation" is mentioned, there is often an association with housing, food sanitation, and refuse collection. While these are necessary components of an environmental health program, the concept that we are discussing today is much broader. It is the concept expressed in the World Health Organization's broad definition "the control of all those factors in man's physical environment which exercise or may exercise a deleterious effect on his physical, mental or social well-being." This definition puts our subject matter into the broad field of preventive medicine. It is my belief that preventive medicine is just as vital in a college health program as is curative medicine.

Environmental health work differs materially from the rest of preventive medicine work in one important detail. Most often in preventive medicine every effort is made to adapt man to his environment. Environmental health work, on the other hand,

[1] *Student Med., 8:* 360, 1960.

has as a fundamental procedure—the adaption of the environment to man. Both approaches frequently are necessary.

One of the really significant features in public health today is the emergence within the past few years of completely new environmental forces in our society. Because of these new forces it seems to me that the status of environmental control and the role of the college health service in this field is a problem of vital importance. As you realize, today's environmental problems differ materially from those of even a comparatively few years ago. Initially, public health efforts through environmental controls were focused on communicable and infectious diseases. Certainly we can be justly proud of the great strides made since the turn of the century in the virtual elimination of communicable diseases such as typhoid fever and malaria, largely through the development of safe water supplies and sewage disposal, milk and food-sanitation practices, and the control of insect disease transmitters. In the past few years, however, we have witnessed the fruition of the chemical age, and we have had a preview of the potentials of nuclear energy. An avalanche of new processes and products, new materials and new energy uses, provide our exploding population with newer and higher standards of living. This higher standard of living has brought with it a whole series of problems in the control of the environment. From the environmental point of view we stand today with respect to these new problems where we were at the turn of the century with respect to the environmental control of communicable diseases.

G. M. Fair has described the evolution of microchemical hazards which have resulted from technological developments, especially in the production and processing of food and the development of energy sources. Some of these developments have caused increased amounts of chemical or other substances, which may be injurious, to be added to food, water, soil, or atmosphere.[2]

The problems of the environment have aroused the great interest of the Committee on Appropriations of the House of Representatives of the United States Congress. A lengthy report on the new problems in environmental health has been made to that com-

[2] *New Factors in Man's Management of his Environment* (London: Chadwick Trust, 1959).

mittee by the Surgeon General of the United States, Dr. LeRoy Burney.[3] That entire report merits your thoughtful consideration. Apparently the Surgeon General feels that the problems of environmental control are so serious that he is proposing the complete reorganization of the U.S. Public Health Service in order that it may deal better with those problems.

Your own American College Health Association has shown its awareness of the new problem by creation of its Section on Environmental Health and Safety. I assume this section was formed because of the new problems in the college environment. Certainly, older environmental problems such as water supply, milk supply, insect and rodent control have been present for years on the college campus, but they were often included as a part of the municipal attack on these problems. Today, there are many new environmental problems on the college campus, and a number of these are present in a much higher degree than they are in the surrounding community. As an example, with the exception of diagnostic x-ray machines the health departments of small American communities presently may not be concerned with ionizing radiation. By way of contrast, ionizing radiation and radioactive isotopes are almost omnipresent on the college campus today. For instance, R. R. Reiter and R. G. Bond state that at the University of Minnesota forty different departments use radioisotopes for therapeutic, diagnostic, and research purposes.[4] They state further that there are sixty areas in the university where x-ray and other ionizing radiation installations are in operation. Since their data are of 1958, it is probable that today, two years later, they would have to increase these numbers. As another example, it is estimated that there are 400 to 500 new chemical substances and compounds created each day. The long-term physiological effects of many of these chemical compounds is unknown. Yet not only are large numbers of these chemicals being used in our college laboratories but often our college laboratories are creating them.

[3] *Report on Environmental Health Problems* (Hearings before the Subcommittee on Appropriations, House of Representatives, 86th Cong. 2d sess.) (Washington, D.C.: Govt. Print. Off., 1960).

[4] Environmental Health and Safety and the Clinical Phases of the College Health Service, *Student Med., 7:* 197–206, 1959.

ENVIRONMENTAL HEALTH AS A PART OF THE TOTAL HEALTH PROGRAM

There is a general agreement that the college health service should be a total health service having both clinical and preventive medicine programs. Health work should not be fragmented with a portion being carried on by administrative units of the college, which are not primarily health oriented. Realistically, however, if fragmentation is to be prevented, it is necessary that the college health service assume responsibility in the total field of health. If the college health service does not take responsibility for environmental health, it is quite probable that some other unit will. In municipal, state, and federal government we have seen this happen from time to time; there are many instances where a health department did not undertake the solution of a health problem and some other unit of government did. An outstanding example of this is in the field of safety, where quite frequently city and state health departments have failed to assume responsibility and where the safety work has been taken over by some other unit of government. I think it is fair to say that this same thing has happened in colleges and universities, where, because of a failure of the health unit to assume responsibility, some other administrative unit of the university did. It is only natural that, once having assumed such responsibility, the unit is not willing to transfer its going program to the health service. In many universities and colleges expansion into all phases of environmental health is now indicated. The following activities are suggested as being basic in the environmental health program of a college health service.

1. Food sanitation: This activity should include not only supervision of food-handling practices, facility planning, and equipment design and installation but should also have a health education component designed to train food handlers in satisfactory techniques.

2. Housing: Supervision of the housing should not be limited to dormitories controlled by the college. A primary responsibility of the college or university is to ensure that young students who live off campus be in buildings that meet at least minimum standards for respectable housing.

3. Radiological health: The program should include effective control of the health hazards from ionizing radiation. Such a program must be campus-wide, and this is a field in which health services must take energetic steps at this time if utter confusion in the future is to be avoided. I see no validity in statements that radiological health measures are different from other health work. It is a part of the total health picture and definitely should be incorporated into the over-all health program. Radiological protection committees can play an important advisory role, but such committees cannot substitute for a program under an operating administration unit.

4. Occupational health: I have used this title because of its general use in governmental health departments. I do not mean to restrict the scope of this health activity, however, to environmental hazards of paid faculty or staff. It is applicable equally well to students in the laboratory or classroom. Examples are the control of mercury vapor in laboratories and of chlorinated hydrocarbons. Included also would be the control of hazards associated with other stresses such as high temperatures, noise, and ultraviolet and infrared radiation. It would be rare indeed to find a college or university that did not have significant occupational health problems.

5. Safety: Safety is one of the most neglected of our health activities, and it is definitely a part of a public health program because of its profound effect on both morbidity and mortality. Safety work should involve epidemiological procedures. Accident prevention has both psychological and environmental components. The logical college unit in which to lodge a safety program is the health service.

6. Planning: In environmental health one of the most effective procedures is the work carried on at the time physical structures are being planned. It is at that time that defects which may have health significance can be prevented. Certainly the health unit should have the function of consultation on a review of plans for new physical facilities in order to point out to the administration any potential health hazards. A similar program is quite effective in governmental health departments. As an example, we find it common practice in state and municipal health depart-

ments to review plans and specifications for new buildings and for facilities such as water treatment plants and hospitals before they are constructed.

To the activities enumerated above it will be necessary to add others depending on local conditions. For instance, in some universities which have their own water supply systems the health service should have the responsibility for ensuring the satisfactory sanitary quality of that water. In many cases the health service should assume responsibilities in the field of plumbing, insect and rodent control, and disposal of both liquid and solid wastes.

STAFFING

The staff required for a college environmental health program will depend upon a number of factors including the size of the population to be served, the special problems, and the facilities available from the community. In many cases one person with broad knowledge of the field of environmental health might constitute the entire environmental health staff. Whether it be a one-man staff or a staff consisting of a number of people, the director of the environmental health program must be, above all, a competent person in his field. It is entirely fallacious to assume that a good environmental health program can be planned and executed by a person who is capable of doing only routine inspectional duties. The director of the program should be a professional health person with sufficient status to deal with other professional groups. In my opinion, in a large institution an engineer with specialized public health training ordinarily is best qualified to direct the environmental health program. It is only fair to tell you that in seeking such a man you will be competing on a "seller's" market. Public health engineers are in relatively short supply, but this in itself is not a reason for not heading the program with an engineer. After all, physicians are also in short supply, and yet the very nature of a health service makes it imperative that physicians be employed. By the same token, if the special skills of a public health engineer are necessary, every effort should be made to recruit such a person even though the market at this time is not particularly favorable from the stand-

point of hiring. I have suggested that one of the very worth-while portions of the program is consultation on and review of plans for physical facilities. Engineers are particularly qualified in this field not only because of their training but also because their professional status makes it possible for them to deal more easily with other engineers either in the designing firms or in the college buildings and grounds departments.

In the large institution it is quite possible that a number of the professional groups will be needed in carrying on the program. At the University of Minnesota the environmental health staff in the University Health Service includes a public health engineer, an industrial hygiene engineer, a safety engineer, a bacteriologist, a number of health physicists, and a number of professionally trained sanitarians (trained at least to the Bachelor's level and in some instances to the Master's level). In a medium-size or small college it may be impossible to justify the services of a properly qualified public health engineer. In such institutions, the head of the environmental health program might well be a well-qualified and trained sanitarian. Generally speaking, such a sanitarian should have been trained to the Master's level in public health.

BENEFITS TO BE DERIVED FROM AN ENVIRONMENTAL HEALTH PROGRAM

Certain benefits of a well-planned and well-administered environmental health program are quite apparent. There will be an appreciable effect on the health of both students and faculty. For instance, not only will a good radiological health program reduce the probabilities of exposure to ionizing radiation to an acceptable low limit and thus protect the physical health, but the very presence of the program should be most helpful in producing a satisfactory mental attitude toward the dangers of radiation. A good accident-prevention program will undoubtedly reduce time lost both by staff and by students because of disabling accidents. A good food-sanitation program should reduce materially the probability of "food poisoning" episodes and should allow for the immediate correction of defects which cause such outbreaks. It is almost certain that the occupational health portions of the

program will reveal defects in laboratories, the elimination of which will promote the health of both students and staff. Participation in the planning of buildings should make it possible to reduce hazards from such things as faulty plumbing, faulty ventilation, and accident and fire hazards. It is quite apparent that a vigorous housing program will improve the conditions under which students live and study.

In addition to these examples of immediate beneficial results of a sound environmental health program the long-term benefits may be even more profound. The fundamental role of a college is to teach, and it is essential that this teaching represent not only theory but practice. The value of the college health service as the "ambassador of health and peace" to foreign students has already been referred to. It is equally important that the health education potentials of a university health service as they relate to American students not be neglected. These are the people who may be expected to occupy positions in government in the future and who will exercise leadership in the communities in which they live. It is difficult to believe that they will have a proper attitude toward public health unless they have had tangible evidences of public health work. A student who lives in a dormitory which is not protected adequately against fire and other safety hazards and who works in a laboratory where there is a complete disregard of the special hazards in that laboratory can hardly be expected to question improper practices of this type after he leaves college. Nor will he adopt proper procedures of handling isotopes if he is not impressed with the importance of such procedures in his college days. The instructor in a personal health course may place great stress on the refrigeration of certain foods, but can a student take this very seriously if he sees the university cafeteria stacking chicken salad sandwiches on food counters at room temperature? The positive teaching value of investigation of accidents as described by Reiter and Bond [5] are immediately apparent. These teaching opportunities, as they will affect the students' future lives, are good enough in themselves to justify a sound environmental health program in the college setting.

One other benefit that is applicable in some instances is the

[5] *Ibid.*

use of environmental health personnel as instructors in course work and as research personnel on problems in their particular field. As an example, such personnel may make outstanding contributions as part-time instructors in departments of preventive medicine, public health, bacteriology, industrial engineering, and sanitary engineering. In the University of Minnesota School of Public Health we feel that the environmental health personnel of the University Health Service are making an invaluable contribution to our teaching program. Also, research in which some of them are engaged is adding considerably to the body of knowledge in the field of environmental health.

In concluding may I remind you that a college health service has at least three functions:

1. Provision of a satisfactory environment for students and faculty and staff members in which they may live and work.
2. Protection of the health of students attending the educational institution.
3. Teaching students the value of preventive and curative medicine through individual and formal health counseling.

I believe that an environmental health program is an essential component of a college health program which meets these three objectives.

Psychiatric and Mental Hygiene Services for Colleges and Universities: The Need for a Reasonable Program*

GEORGE M. LOTT, M.D., AND HERBERT R. GLENN, M.D., PENNSYLVANIA STATE UNIVERSITY

THE clear common objective of the health services and faculties of universities is to deliver the students to the classroom in optimum condition for learning. Plans for the prevention of emotional tangles involve some implicit understanding of the human forces at work in effective higher education. This does not gainsay that it is the responsibility of the neophyte collegian to walk forward on his or her own two legs and assume the responsibility for selecting, absorbing, and correlating classroom and other experiences.

The main actors in this drama are the students, whose mystifying adolescent and postadolescent vagaries can be modified by the specialties of medicine, including psychiatry, and by the psychological and sociological services. The faculty are in need of developing wisdom and aptitude for the helpful management of these students, who represent the potential leadership of the future. As D. L. Farnsworth points out, "Mental Health programs

* Presented at the joint meeting of the Eastern Division of the American Psychiatric Association and the Psychoanalytical Association of Canada and the United States, Montreal, 1956.

may assist in finding ways to initiate an educational philosophy which substitutes positive motivating features for the all too prevalent pressure of work done for fear of failure." [1]

This paper, while outlining a reasonable mental hygiene program, also emphasizes the need for clinical treatment facilities for the many colleges and universities which are far removed from the resources of large population centers. The Pennsylvania State University in rural Pennsylvania is typical. There are no private psychiatrists, community psychiatric clinics, or the resources inherent in a medical school. There is, therefore, urgent need for therapeutic facilities on the university staff. This university has an excellent Psychological Counseling Service and a Mental Hygiene Psychiatric Consultation Service. The Psychiatrist is on the faculty which trains clinical psychologists at the doctoral level. The Speech, Hearing and Reading Clinics, which are in operation, are also effective resources.

Preventing and correcting blocks to learning and aiding in personal effectiveness are functions of physical health and of technical, educational, and medical psychology. Defects in vision, hearing, and motorspeech expression, of course, interfere. "Education" is used in a broad sense to include also removal of blocks which arrest or retard normal learning and personality development. An important handicap is immaturity and unfamiliarity with a sense of responsibility. With adult privileges, there is the obligation to exert effort and to consider others. Furthermore, nervous disorders distract and reduce efficiency.

Enough treatment time and psychotherapy must be provided so that it justly can be determined whether or not an individual student, especially an upperclassman, should continue in school, lighten the course study, or drop out. Some students who would otherwise withdraw may, under continuous psychotherapy, continue their course work. If there are no private or clinical resources in the locality to accomplish this, there is an increased need for a more ample university staff.

The more brilliant the mind, the more complicated are the emotions. The most common problems which demand clinical treatment include poor study habits, ambitions of the parents im-

[1] Psychiatry and Higher Education, *Amer. J. Psychiatry, 109:* 266–271, 1952.

posed on the students, and a trend toward perfectionism, detailism, and fatigue. Very distracting are love affairs, examination anxieties, and inferiority feelings. Persisting egoism and rebellion are often negative factors. True anxiety neuroses are not uncommon.

For illustration, a few thumbnail pictures indicate some of the problems needing attention. There are some frank neuroses but true psychoses are relatively rare.

Frank could not concentrate well or study regularly, always being a last-minute crammer. In high school he received honors without opening a book, by simply relying on what he heard in class. It was not until his junior year in college that he was able to work regularly, especially if the subjects were not interesting. He remarked, confidentially, "I guess I was not willing to do daily work until I realized the lower three-fifths of the high school were not here to make my work look well in comparison." He has become known as a "fritterer."

Joshua tried vainly to apply himself while sitting looking at his books. He said, "I know it will be terrible to let father down. He was so insistent that I be an engineer like himself instead of going to art school. I guess I am no student."

John was so anxious about examinations that he could not use all he knew. When he was in grade school, his mother worried constantly and attempted to impress upon him the need to get an almost perfect grade.

George wore himself out and went "stale" staying up late "so as to get every detail just right." Everything had to be so perfect at home that the youth honestly came by an almost lethal dose of detail and perfectionism. When an infectious illness made him miss a week of classes, he did better than when he studied all the time.

June was so thrilled and excited at being around boys she could not absorb enough knowledge to make the required average. Her mother said, "How I wish we had let her go to the public high school where she could get to know boys and be at ease with them."

A graduate student remained closely attached to his mother but vaguely felt guilty over wanting her all to himself. The mother had always turned her attention to this son, neglecting his quiet

ineffective father. The acquisition of advanced scientific knowledge was glorified by the parents and rewarded. However, this student began to do poorly. It took over a year of treatment to clear up the state of guilty confusion which distracted the youth from his studies. Somehow, the acquirement of scientific knowledge had been the equivalent of possessing his mother's affection and pushing his father further out of the picture. Of course this process was hidden until treatment had unearthed it so that this and other misunderstandings could be remedied. Only then could he apply more of his ability.

Time and patience are required to discern the real meanings of handicapping feelings and behavior. Special skills are necessary for the treatment of the more involved neuroses. Psychotherapy (whether it be of short duration or protracted, or deferred until the patient is under less stress) is only one phase of a treatment program. The individual recommendations may fall under several categories in which teachers, advisors, friends, and fellow students all may participate. For example, in addition to medication, speech and hearing correction, and psychotherapy there are educational needs, such suitable curriculum and proper study loads, improvement in speed of reading, and formulation of good study habits and methods. There are moreover social and general recommendations, such as residence location changes, refreshing outside activities and recreation, development of interest in a hobby, and other guidance.

Higher education, no matter how excellent or comprehensive, cannot be fully effective for all students unless capable counseling and well-guided speech, hearing, and reading clinics, and remedial and training resources are available. No mental hygiene program is complete until facilities are provided to implement medical and neuropsychiatric consultation recommendations. The preservation of students' health should be an integral part of education. Without these and other remedial resources some students have to withdraw, with much loss of personal investments not to mention university investments.

These observations cannot but reveal many of the obvious and not-so-obvious influences in campus life. Therefore, there may be consultations with mental hygienists on: (*a*) the policy manage-

ment of unusual situations involving personalities, (*b*) psychological factors influencing learning and personality maturity, (*c*) guiding administrative policies, (*d*) prevention of personality and allied problems, (*e*) the effect of community relationships and social customs on emotional stability and maturity, or (*f*) selection and screening of candidates for admission to colleges, teacher training, and employment. Discussion of such a variety of subjects is not within the scope of this communication. Some phases, however, may be considered in the following pages.

Administrative actions in formulating general campus regulations and policies, pertaining not only to conduct and discipline but also to group attitudes and morale, can be made more constructive and effective by consideration of the human elements. College administrators, deans, faculty and dormitory advisors, dormitory masters, and the like can profit from group discussion in which mental hygienists take part. Psychiatrists, psychologists, and sociologists should be available to such personnel to consider the best management of special problems.

There are not enough specialists to study each pupil individually, but it is possible for them to point out practical preventive principles, policies, and other ways and means of forestalling the problems brought in for correction. To be busy with the quieting of examination jitters or other disorganizing anxiety states is praiseworthy. However, to help furnish the know-how of study methods and habits and to prevent stirring up needless fears would save hundreds of hours of the time of faculty advisors, deans, instructors, roommates, and others who may be involved in working with or aiding upset students. Certainly the expensive time of key personnel can also be more profitably used in the prevention of educational problems, the development of more efficient teaching methods, and on productive research. To attempt this, however, without current individual case studies on specific personal problems would be like trying to build a house without a foundation.

Phases of education, especially ways of teaching and curricular planning, are difficult enough to necessitate careful consideration by experts and mental hygienists. Engineers, medical students, home economists, farmers, teachers, and others can all profit from

the study of human nature in elementary psychology and mental hygiene courses. The development of courses in personal, family, and community health for junior and senior high school students is in demand. While teaching such subjects is important, the contents of such studies for different groups and the different ways of presenting them call for the most competent medical psychological knowledge and advice.

In any comprehensive program worthy of full support, future progress is dependent not only on broad research but also on the development of personnel by graduate training. This phase must furnish the highly skilled specialized staff to carry on, improve, and enlarge the programs we have considered. Many college mental hygiene activities can be fully justified on either student advisory and special service grounds or as a necessary graduate clinical educational resource. In other words, the case-work activities, which are designed to aid the student body to profit more fully from university programs, are the main media with which teaching and research are performed and the advanced training of personnel accomplished.

Budgetary provisions are of course to be considered. It may be less costly if medical school staff is used. However, the real saving of expensive faculty and student time and effort by a successful mental hygiene program may defray much of the cost of the mental hygiene clinic. In colleges and universities the mental hygiene psychiatric service, which is functionally a division of the health service, must also work closely with the special counseling and student advisory services.

A staff including a psychiatrist director, a psychiatric social worker, and a psychologist with secretarial service costs (1956 cost level) from $4,000 to $5,000 annually per each 1,000 students, with most of the necessary expenses included. Such a staff can economically be supported on a relatively full-time basis with 5,000 students at about $5.00 per pupil per academic year. It could furnish consultations, some teaching, and a limited amount of psychotherapy.

The 1953 Kansas University survey of 738 colleges and universities (from 1,141 canvassed) revealed a median annual cost of $12,500 or higher for basic mental hygiene services per 5,000 stu-

dents with a median of 5 per cent of the students securing professional attention. This of course is a middle position of all such resources and therefore does not include a full multidisciplinary staff such as is required for the most efficient utilization of expensive staff time.[2]

If charged with responsibility for much special therapy, the budget and staff would have to be increased. If faculty or employees are also eligible for service (other than when specially referred by the administration for evaluation), the cost would rise greatly.

A per capita assessment should never be made on the basis of all students and faculty being eligible for follow-up treatment. One serious case may involve more than several hundred hours of therapy averaging a cost figure around $15 an hour. Any inexpensive prepaid insurance plan would have to be exceedingly limited in benefits for nervous disorders. However, consultations for diagnosis and advice on referral by a physician usually could be programed.

SUMMARY AND CONCLUSIONS

The most common problems are largely within the sphere of the normal: The ambitions and value systems may not yet be developed in youth. The immature "fritterer" is a term for the brilliant student who was never challenged in high school and so came to college without tenacious work or study habits. The perfectionists and detailists are those who get lost in the forest of knowledge and therefore cannot see the general form and substance of the woods. The final-examination anxiety and similar nervous states seem inevitably to be associated with fatigue, cramming, and memorizing rather than with gaining full understanding of the subject. There is the eternal search for some motivation for learning save fear of failure of examinations. Frank neuroses may be set off by heavy stresses and chance incidents, but psychoses are relatively rare.

The functions inherent in a mental hygiene program, besides

[2] S. Gundle and A. Kraft, Mental Health Programs in American Colleges and Universities, *Bull. Menninger Clin., 20:* 57, 1956.

making individual diagnoses and formulating treatment plans, may include research into the causes, prevention, and remedies of nervous disorders which interfere with learning and the development of stable characters. Such knowledge may aid in formulating more constructive administrative policies. Professional staff development and the teaching of mental health principles are needed. Wise budgetary planning is essential to support the continuity of this broad program. A staff of psychiatrists, psychologists, and psychiatric social workers can provide the most efficient methods of utilizing expensive psychiatric time in these remedial and research objectives. They could also enrich graduate clinical psychological and social work programs, which are so important in providing staff training and recruitment.

There is a special need for remedial treatment and psychotherapy in colleges and universities, especially in those without a medical school, metropolitan community clinics, or private psychiatrists. Enough therapy time is mandatory to save some students from misfortunes and failures or costly withdrawal. Always there should be a search for ways of preventing difficulties and expediting successes.

There are many opportunities to lessen stress and resolve acute states before they become chronic. The natural emancipatory maturity drives are assets to be encouraged, and most deans and faculties are sympathetic in this effort. Professors are hungry for knowledge of the basic simple dynamics to guide them. While there are some generally accepted principles in college mental hygiene [3] the development of constructive programs must be fitted to the needs of the individual campuses.

In all efforts to enable students to make the best use of expensive higher education, the mental hygiene psychiatric staff have a definite co-operative part to play.

University graduates are the potential future leaders of our nation. The problems of the present and future must be left in competent hands.

[3] G. M. Lott, Moderator, College Mental Hygiene Roundtable, Annual Meeting American Psychiatric Assoc., Atlantic City, 1952; *Proceedings, Fourth National Conference on Health in Colleges* (Ithaca, N.Y.; American College Health Association, 1954); and C. D. Darling, The Multiple Disciplinary Approach to the Solution of Student Mental Health Problems, *Ment. Hyg., 41:* 170–177, 1957.

Traumatic Dislocation of the Hip: A Football Injury

H. B. COPLEMAN, M.D., RUTGERS UNIVERSITY

DOCTORS who devote special time to athletic medicine are in a unique position. Like surgeons in the front lines of the infantry (at the battalion aid stations) we see the injured almost as soon as the injury occurs and our diagnoses and the primary treatment we render at the very beginning may have a profound influence on the future rehabilitation of the patient.

It is unfair all around to entrust the care of a football team, for example, to the physician who just shows up casually for the "game." Only the regular "team physician," through years of experience gained by attending practice sessions and every game, is familiar with the personality and idiosyncrasy of each player on his team. He knows who is fit to play and who is not; he recognizes when a boy is fatigued and should be withdrawn from the contest to prevent injury. What's more, he becomes expert at spot diagnoses. Within the short time allotted him to examine an injury, he must recognize whether the boy is fit to continue to play or must be withdrawn; whether he has a ruptured spleen or kidney, torn ligaments, dislocations, fractures, or severe head injury. Finally, if he is an orthopedic or general surgeon, he is all the more valuable because he can render definitive treatment and follow the case to its conclusion. Football, I am sure we will all agree, is the game requiring the utmost attention of the physician.

* Presented before the Section on Athletic Medicine, American College Health Association, Thirty-eighth Annual Meeting, Toronto, April 28, 1959.

It is the game that is responsible for most of the injuries occurring in collegiate athletic sports. In spite of the best protective equipment, training, and coaching, severe injuries still occur.

I have been Team Physician at Rutgers University for the past twenty-five years, and in looking after thousands of students on the varsity, freshman, 150-pound, and junior varsity teams in all sports I have seen my share of fractures, dislocations, lacerations, ruptured cartilages, concussions, sprains, contusions, and the like. But it was not until the last football season that I first saw a dislocated hip on the football field. This impressed me so that I made a search of the literature and found that, while all sorts of traumatic agencies had been reported, no one had mentioned football as a cause.

Dr. Thorndike in his book *Athletic Injuries* lists the type and number of injuries observed at Harvard during 1932–1954.[1] Not a single case of dislocated hip was included. I spoke to Dr. McPhee at Princeton, and he told me he had only one case. It occurred in 1947 during a Princeton-Penn game. The player was carried off the field in a stretcher to a hsopital where the hip was x-rayed and reduced under anesthesia. He said the student was on crutches for a long time, three to four months, but made an uneventful recovery.

Also from personal communication, I learned from Dr. Griess at Penn State that they also had one case. This occurred in 1953 during a practice scrimmage. This patient was taken to a hospital where the hip was x-rayed and reduced within twenty minutes. No weight bearing was allowed for nine weeks, during which time he was up on crutches. One year later he was allowed to return to football. In a "Symposium on Sports Injuries," Dr. Reno of Bethlehem, Pennsylvania, devotes a whole chapter to injuries of the hip and pelvis, but hip dislocations are not even mentioned.[2]

Dr. Donald Slocum of Oregon told me that at the University of Oregon they have no record of hip dislocation in thirty years.

I am sure that, were I to take a poll of those in this room, other cases would be brought to light. The fact remains that this football

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[1] A. Thorndike, *Athletic Injuries* (Philadelphia: Lea and Febiger, 1948), p. 20.

[2] J. H. Reno, Symposium on Sports Injuries (T. B. Quigley, ed.), *Amer. J. Surgery, 98:* 451–456, 1959.

injury is sufficiently rare to merit reporting here, especially since the treatment still remains a subject of considerable controversy.

Before proceeding with my own case, I think it might be pertinent to review something of the pathology, symptoms, diagnoses, and treatment of hip dislocations in general.

The ball-and-socket arrangement of the articulating bones, the thickness of the joint capsule, and the organization of the bony lamellae according to the lines of stress of the femoral neck all contribute to the strength and stability of the hip joint. In addition, the anterior capsule is reinforced by the powerful iliofemoral or Y-ligament of Bigelow and the oblique head of the *rectus femoris* muscle. Therefore there is only one position in which the hip joint is especially vulnerable—when the femur is flexed and adducted. In this position the femoral head is unprotected by the acetabulum and is held in position only by the joint capsule. A violent thrust along the line of the femur may tear the capsule and dislocate the point posteriorly. Anterior dislocations are less common and require the femur to be abducted and extended. Clinically both types of dislocation are recognized by limitation of all hip movements.

In posterior dislocations, the head of the femur is forced against the posterior part of the capsule, which it tears, and then passes upward and backward along the dorsum of the ilium to occupy an iliac or sciatic position. The thigh is flexed, adducted, and internally rotated. The foot is inverted, and the heel sometimes rests on the dorsum of the opposite foot. Flexion of the thigh is marked when the femoral head remains low (sciatic) but is slight when it is high over the ilium (usual position). With this upward displacement of the femur, shortening is always present. There is marked alteration in the contour of the hip; the normal depression behind the trochanter is obliterated; the gluteal fold is raised. There is an unusual fullness in the abducted buttock and external rotation of the thigh is impossible. According to McLaughlin in his book *Trauma* "no other condition produces this picture." [3]

In anterior dislocations, since the head of the femur is in front and slightly below the acetabulum, there is *external* rotation and abduction deformity with slight *lengthening* of the limb.

[3] H. L. McLaughlin, *Trauma* (Philadelphia: Saunders, 1959), p. 465.

COMPLICATIONS

Watson-Jones lists the following complications of dislocation of the hip:

1. *Fracture of the acetabulum.* Posterior dislocations are often associated with a posterior marginal fracture of the acetabulum. Usually the fragment is held to the neck of the femur by fibers of the joint capsule so that when the dislocation is reduced, it is replaced accurately. Occasionally the fragment may be rotated and then operative replacement becomes necessary.

2. *Sciatic nerve injury.* The sciatic nerve may be injured by stretching over the head of the femur or by compression in the sciatic notch. This causes paralysis of muscles below the knee and a wide area of anesthesia.

3. *Avascular necrosis of the head of the femur.* This is the most frequent complication. The head is supplied with blood by vessels from the joint capsule and the ligamentum teres. If all the blood vessels within these structures are torn or thrombosed, avascular necrosis is inevitable. This complication arises in 20 to 30 per cent of dislocations even when promptly reduced and is more frequent if reduction is delayed.

X-ray evidence of avascular necrosis appears in six to eight weeks if there is complete loss of blood supply. If vascular injury is less extensive there may be no evidence of it until degenerative osteoarthritis develops after several years.

4. *Myositis ossificans.* As in all other dislocations and joint injuries, the periosteal attachments of muscles and of capsule are avulsed and a subperiosteal hematoma develops. If the dislocation is immediately reduced and immobilized, the periosteum is replaced and the hematoma absorbs. Subperiosteal ossification is then minimal. Delay in reduction, unduly rough manipulation, lack of suitable immobilization, or passive stretching may increase the hematoma and the resultant development of traumatic myositis ossificans.[4]

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[4] R. Watson-Jones, *Fractures and Joint Injuries* (2d ed.; Baltimore: Williams and Wilkins, 1952), pp. 618–619.

TREATMENT

Immediate: Everybody agrees on (1) closed reduction by the Bigelow method for those without significant fractures and (2) open reduction with internal fixation of the rim segment for those cases with significant fractures.

Bigelow technique: With the patient supine, the limb is flexed as upward traction is applied bringing the femoral head opposite the acetabulum. The limb is then externally rotated to beyond neutral and brought out in abduction as the hip is extended.

Late: But after the reduction, then what? How long should the limb be immobilized, and when should weight-bearing be permitted? Authorities differ widely in their opinions.

Watson-Jones does not recommend the practice sometimes followed of permitting early movements of the joint and encouraging early weight-bearing. He feels that the assumption that the hip joint is so stable that it will not redislocate is erroneous. Redislocation is quite possible, especially if there is a fracture of the posterior margin of the acetabulum. Early mobilization increases the danger of necrosis of the femoral head and of subperiosteal hematoma formation with resultant myositis ossificans. He recommends application of a plaster spica and two months of immobilization in cases without fracture of the acetabulum.[5]

McLaughlin recommends that "the limb be suspended in balanced suspension and motion be progressively increased within the limits of pain." [6] He allows the average patient up on crutches *without* weight-bearing about two weeks after reduction. The problem of *when to begin weight-bearing then arises.* In this there are two schools of thought. One group advises non-weight-bearing walking with crutches for twelve to twenty-four months. They believe that this permits revascularization by creeping replacement of devascularized bone in the femoral head and gives these young patients the best chance to avoid late joint changes.

The other school emphasizes that this concept is merely theoretical and that the value of a prolonged non-weight-bearing regime has not yet been established. They believe that joint

[5] *Ibid.*, p. 621.
[6] *Op. cit.*, p. 464.

changes occur in spite of this program, and therefore they permit weight-bearing within two or three months after injury.

In support of the latter view, Bundens and Benavides of the Philadelphia Naval Hospital, in a report not yet published, have followed twenty-two cases that were allowed to bear weight very early for two to five years.[7] They based their work on two premises: (1) Recurrent dislocations of the hip are extremely rare once initial stability had been obtained. (2) The nutrition of the cartilage of a joint depends entirely on the synovial fluid, and the amount of fluid in turn is largely influenced by *active* use of the joint.

It seemed logical to them, therefore, to permit weight-bearing as soon as the soft tissues about the hip joint have had an opportunity to heal. They feel that traction in any form is not only unnecessary but may even be harmful. Of their twenty-two patients, eleven were fully ambulatory by the end of six weeks and eleven between seven and twelve weeks following injury. Results were classified as good or excellent in all but one patient in whom there was an anterior dislocation that had not been reduced until seven days after injury. In the cases followed by Bundens and Benavides the incidence of aseptic necrosis was less in those permitted early weight-bearing.

CASE REPORT

P.M., aged twenty-one, a "tail-back" in the single-wing system, was running back a punt on October 19, when, in the act of "cutting back," he was thrown off stride by collision with a teammate and then "gang-tackled." When he failed to rise, it was obvious that he was injured. I hurried on the field, where I found him lying in the left lateral Sims position, groaning with pain. His face was gray. His right foot was inverted, the knee partially flexed and the thigh adducted. The diagnosis of hip dislocation was apparent. I tried traction tentatively, but pain was too severe. I called for a stretcher to take him to the locker room with the intention of giving him morphine before attempting reduction. We slid the stretcher beneath his back while I maintained firm

[7] Personal communication.

traction on his inverted foot and knee. As he rolled himself upon the stretcher at my request there was a loud "clunk" which was heard by his teammates ten yards away. At this point he breathed a loud sigh of relief and exclaimed, "Gee, Doc, that feels better." His facial color returned immediately, and we carried him to the locker room in comparative comfort, where I administered 75 mg. of Demerol. The trainer supported him while he took his shower, and we bandaged his affected hip with a rubber "slingshot," put on as a hip spica, and allowed him up on crutches with no weight-bearing. He was able to eat his dinner that night with his teammates and flew back with the team and was put to bed in the infirmary on the campus. On the next day x-rays of his hip showed perfect position and no fracture of the acetabulum. He remained in bed for one week without traction or immobilization in complete comfort, after which we fitted him with a splint which allowed him to be ambulatory but not to bear weight on the hip. He attended classes wearing the brace continually until December 4, when more x-rays were taken. He was free of discomfort, and x-rays showed no evidence of abnormality in the head of the femur. We therefore discarded the brace at this time (seven weeks after injury) and permitted him to bear weight immediately. In January he participated in an indoor track meet. X-rays have been taken monthly, and there has been no change in the head of the femur. At the present time he is actively engaged in track as a sprinter.

DISCUSSION AND SUMMARY

A case is presented wherein a young healthy adult sustained a posterior dislocation of the right hip (clinical diagnosis) during a football game. Reduction was accomplished *immediately* without anesthesia on the field of play within two minutes of its occurrence. Postreduction x-rays revealed no injuries to the acetabulum. Therefore after one week of bed rest he was allowed to attend classes wearing a long leg brace. After seven weeks the brace was discarded and full weight-bearing permitted. X-rays taken monthly have not shown up to the present any signs of necrosis or osteo-

arthritis. He is now (six months later) running and competing in track meets without evidence of aftereffects.

I realize that one case proves nothing. However, I cannot help feeling like Benavides and Bundens that in young, healthy, well-conditioned, muscular adults who sustain an uncomplicated hip dislocation prompt reduction will permit early weight-bearing (after six to eight weeks) and is the preferred treatment. If at any time in the ensuing two years x-ray reveals abnormality in the head of the femur, there will be time enough to use prolonged non-weight-bearing.

Furthermore, we should make an effort to reduce these dislocations immediately, on the field of play if at all possible, for this is the time when it is easiest. Without doubt, the shorter the duration of trauma, the less the damage to the tissues and therefore the shorter the healing period.

I grant that it is useful to have x-rays before reduction, but for a team physician this is a luxury which can be dispensed with since, in most cases, the diagnosis is obvious. The comfort of the patient and the rapid healing gained by immediate reduction more than makes up for the theoretical need for prereduction x-rays.

Case Report: Traumatic Hip Dislocation in Football*

HENRY T. HOLT, M.D., WAYNE STATE UNIVERSITY

AS you know, traumatic dislocations of the hip are quite rare, comprising only 2 to 5 per cent of all dislocations, depending upon the particular series studied. To produce this dislocation, great force is required, so it follows that most cases occur in young adult males, who as a group, are most likely to be subjected to the necessary violence. In spite of this fact, this injury in football comprises only a very small percentage of reported cases. Of these, the posterior dislocations are much more frequent. Thus a case of an obturator dislocation may be classified as very uncommon. This very rarity makes it one of unusual interest to this group.

The mechanism of the anterior dislocation is obvious; the primary factor involved is forcible abduction. This results in the neck or trochanter impinging on the acetabular rim, levering the head out of the socket and through the anterior capsule. If the hip is flexed, the head will move down toward the obturator foramen. In this particular case there is another factor of interest, the individual himself. He—Dave—was at that time twenty years old, 5 feet 8 inches tall and weighed all of 155½ pounds. He played guard. As a matter of fact he was one of the better guards in our conference. What he lacked in size and weight he made up for in quickness and determined drive.

* Presented before the Section on Athletic Medicine, American College Health Association, Thirty-eighth Annual Meeting, Toronto, April 28, 1960.

At the time of injury our opponents on third down had reached our one yard line. Dave went in low, trying to "submarine." Their play was aimed at his spot, and he was double teamed. One man hit him low, catching him on the inside of the left thigh, and the other hit him high on the outside shoulder, twisting and flexing his trunk. They were big boys—and something had to give. Dave's hip gave, but he didn't. They failed to move him enough; the play piled up, and we took the ball on downs. When they unpiled, the diagnosis was evident almost at first glance. Dave was on his back, in obvious pain with his left leg flexed, abducted, and externally rotated. Palpation revealed the flattened hip with the trochanter displaced inward. Without delay he was taken to the field house by stretcher and was given Dilaudid, gr. 1/20.

I was optimistic enough to hope that the almost immediate care *might* permit me to be a shining example of what can be expected from immediate expert medical care, but the shine was quickly tarnished for my attempt at reduction was a complete failure.

So we went to the hospital by police ambulance and were taken directly to the x-ray department. The plates showed the obturator type of dislocation. In the operating room Dave was given a general anesthetic plus succinylcholine chloride. Reduction was attempted using the Allis method. On the first attempt the head caught on and slipped around the rim of the acetabulum, converting it to a posterior type, but on the next attempt it slipped back in place rather easily. X-rays were taken and confirmed the reduction.

Aseptic necrosis of the head is to be feared in these cases, and experience has shown that traction postoperatively reduces the incidence of this complication. Russell's traction was applied and maintained for three weeks. He was then on crutches without weight-bearing for three months. Progressive active exercise was the basic physiotherapy used.

Frequent x-rays were made during next two years, with no evidence of aseptic necrosis or periarticular calcification. He has full range of motion, no limp, and is completely symptom free.

As for his activity, when he was allowed weight-bearing he

already had full range of motion and in a matter of a few weeks was participating in all his usual activities. During his last two years in school he again was first-string guard and also was on our varsity wrestling team. He is now in military service.

That is the story of this case. From it I think we can learn one thing. Properly cared for, even such a severe injury does not mean the end of active contact sports participation.

Case Report: Myasthenia Gravis

PAUL F. TEMPEL, M.D.,
NORTHERN ILLINOIS UNIVERSITY

THIS report concerns a thirty-five-year-old single female patient who came to the Health Service at Northern Illinois University, DeKalb, Illinois, during the summer term in 1959. She was a student in the graduate school for the summer term, and her occupation was schoolteaching.

She entered the Health Service Clinic walking very slowly with the aid of a cane, certainly very much crippled. Her gait was that of a flaccid-type paralytic. Her request was of a nonprofessional nature, but she requested to see the physician. This student had received a parking ticket from the campus police for parking in a restricted area, and she requested a medical excuse from the clinic, since it was impossible for her to walk a great distance because of her illness. Since all students are required to have a health chart, which includes physical examination and history, the chart accompanied this student with her interview. It was obvious that she had an excusable complaint, and her request for a medical excuse to park in restricted areas was granted.

On her health chart she had listed her illness as "neuromuscular insufficiency, cause undetermined, associated with excessive glucose metabolism." Because the diagnosis was not definite, I took the liberty to review her history, which is as follows. She had been ill for the past fourteen years with an illness that had remissions and exacerbations. From time to time she was almost completely

well, but exhibited muscular weakness associated with any increase of activity. She found that, if she rested several times a day and went to bed around 7:00 P.M., she did fairly well. Since she taught kindergarten, she was able to adapt her way of life to her work. She was able to lie down when the students did so and thus was able to "conserve her energy."

She noticed that with increased fatigue she had difficulty swallowing and consequently from time to time had to go on a liquid diet. On occasions she developed a marked feeling of air hunger from increased activity. She had to have someone, on occasion, even button her clothes for her. On many occasions she developed "black-out" spells when she remained upright in one position too long, and as a result she was given electroencephalogram tests and was diagnosed as a subthalamic type of epileptic and placed on Dilantin. She also had a rather severe type of constipation, causing severe abdominal cramps from time to time, which was relatively well controlled by the use of bile acids and Probanthine tablets.

The patient stated that over the years she had become progressively worse and that she was afraid she would lose her teaching position, because recently she had had to be absent frequently. She also stated that during the fourteen years she had contact with some fifty doctors and had been hospitalized in several of the best clinic hospitals in the country. She had been investigated by metabolic clinics, psychiatric clinics, neurological clinics, and so forth. Evidently, multiple sclerosis was the diagnosis usually made, and she was told that it was incurable. Because of the need for psychological adjustment to her illness, she visited a psychiatrist once a week, as well as an internist once a week. All in all she averaged $30.00 a week in medical and drug costs. Whether or not her illness was considered to be organic or psychiatric in nature must be left to guess.

I suggested the possibility of myasthenia gravis to the patient, and she said it had been mentioned several times as a possible diagnosis, but no one had gone any further along that line of investigation. It was suggested to her that she be given a test with a subcutaneous injection of Prostigmin, and she consented.

She was given 2/3 cc. of 1:1000 dilution of Prostigmin at

8:35 A.M. the following day and within five minutes had developed complete remission of her signs and symptoms. Because of the result of this trial injection, she was placed on Mestinon (Roche) 60 mg. tablets with a frequency as required. During the course of several days she found that she could go for two and one-half hours with complete remission of her symptoms. At the end of this time she developed a sensation of goose-pimples over her body, as a first indication of need for more medication, and then progressive muscular weakness.

This patient has been followed for the past nine months and has done exceedingly well with the management of her disease. Since the original placement upon Mestinon, we have given her Mestinon Timespan tablets, 180 mg. each, for bedtime usage, and it has helped considerably in the control of her symptoms. Prior to the use of these tablets she had to awaken every three hours for medication in order to prevent awakening in such a weakened condition that it was difficult for her to swallow medication.

DISCUSSION

The reason for reporting this case is not to illustrate diagnostic acumen, but rather to show that so often one fails to consider in diagnosis an illness which is readily relieved by treatment. We have, all too often, hospitalized patients and gone through a whole series of laboratory tests, summarized the tests, and made a diagnosis without ever considering the patient as an individual.

Many times in the general practice of medicine it is necessary to take a short cut to diagnosis and make a trial on medication with the results leading to a diagnosis. This is an example of such a case. One must think of a disease to make a diagnosis, but one must also follow up that idea with action. This patient was so involved in metabolic, neurologic, psychiatric, and medical study that the multiplicity of testing pushed aside the one practical test for establishing the nature of her disease.

As early as fourteen years ago, when she was hospitalized at the onset of her illness, an intern suggested the possibility of her

illness being that of myasthenia gravis, but no one followed up this suggestion with the simple therapeutic trial.

The patient, incidentally, had a brother who is a radiologist, and she asked him about the possibility of her having myasthenia gravis; he said it wasn't possible because she did not have the classical sign of ptosis of her eyelids. If one insists on the classical textbook picture of an illness before diagnosis, it seldom will be found.

Finally, just because an individual has been investigated by a large clinic or clinics, there is no reason to assume that mistakes of omission have not been made.

SUMMARY

This is a report of a college graduate student with progressive myasthenia gravis, unrecognized as such for some fourteen years by a multitude of doctors and clinics.

It is hoped that presentation of this case will act as a reminder to keep searching for the right answer to a medical problem and for the doctor to think of a curable or correctable condition in differential diagnosis, prior to the unusual or uncorrectable condition.

Abstracts of Current Literature

Ball, A. M. Outpatient Record Management: Pertinent Questions about Current Principles and Practices. The General Hospital Outpatient Department, *J. Amer. Ass. Record Librarians, 30:* April 1959.

A review of statistics and literature will offer proof that the care of the ambulatory patient is increasing in patient numbers and in variety of illness and methods of treatment. It is predicted that the ambulatory patient will be an increasingly greater consumer of medical care. Therefore the record of the outpatient should be as carefully and painstakingly developed as the inpatient record. Points to be stressed are the availability of the complete medical record, a program for retrieval and distribution, and the filing of special reports. Appointment systems should be co-ordinated to these ends. A great weakness in the management of the outpatient records is that they are not analyzed and used for improvement of medical care or research.

Records should be in chronological sequence rather than with the information divided into services. The recording of visits to numerous clinics can follow one after the other if each clinic is supplied with a date and name stamp. A doctor's order sheet is suggested for clarity in outlining treatment. There is need for complete written communication between members of the health team. There should be a weekly or monthly conference of the clinical staff for the review of outpatient records at which results of examinations and tests should be studied and the management of the illness outlined.

The use of the diagnostic index for outpatients is practically nonexistent. Is there a recommended procedure for an outpatient diagnostic index or is this activity unnecessary? Should every

diagnosis on every patient be indexed? Should outpatient and inpatient be indexed on the same card?

The expansion or development of any of these activities requires the wholehearted interest of the director of the outpatient department. He has the opportunity to encourage or dispel interest in the development of a better medical record program.

JOHN BUTLER

Harvard University

Boroff, David. American Colleges: What Their Catalogues Never Tell You, *Harper's Magazine, 220:* 33–40, April 1960.

Mr. Boroff fires a broadside at American higher education. He hits the mark on a number of points, has some near misses on others—enough to shake all of us up. His challenge of "the concern with student mental hygiene and the close supervision of student organizations—'psychiatric baby-sitting' someone called it"—is indeed provocative. His interpretation of what is involved —"the will to power on the part of administrators, . . . another instance of the invasion of privacy that characterizes our time"—has a germ of truth to it. His view may be largely true of such programs in some colleges. But to characterize all, or even most, student mental hygiene programs in this way is inaccurate.

This article follows Mr. Boroff's two series of articles on American colleges in the same magazine during the past two years. He is now preparing this material in book form. I believe that the article is good for us, even if some of the innocent get hit in the process.

JOHN E. REINHOLD

University of Pennsylvania

Case Records of Massachusetts General Hsopital, Case 45511, Myocarditis in Young Adults, *New Engl. J. Med., 261:* 1283–1293, Dec. 17, 1959.

This is an excellent presentation of the case of a young man, thirty-two years of age, with idiopathic myocarditis, granulomatous type, with involvement of endocardium and epicardium.

The patient complained of chest tightness on exertion, was admitted to the hospital two days later, and died forty-three hours after admission. Previous history was complicated by pneumonia ten months earlier with hypertension also noted. Six months before admission he was treated with oral penicillin for fever and sore throat. This was followed by a skin rash, arthralgia, and then exfoliative dermatitis. He was treated with Meticorten until the onset of symptoms of myocarditis. The discussion of differential diagnosis is especially valuable.

LEONA B. YEAGER

Northwestern University

Combined Rheumatic Fever Study Group. A Comparison of the Effect of Prednisone and Acetylsalicylic Acid on the Incidence of Residual Heart Disease, *New Engl. J. Med.*, *262:* 895–902, May 5, 1960.

This report gives results of a study comparing prednisone and acetylsalicylic acid for the treatment of acute rheumatic fever. The co-operative study group in a carefully controlled experiment with fifty-seven subjects in their first attack of unequivocal rheumatic fever treated within twenty-eight days of onset with either large doses of prednisone or acetylsalicylic acid found no evidence that prednisone was superior in preventing residual rheumatic heart disease. Both agents suppress imflammatory reaction, but cardiac damage may develop even though the acute symptoms are promptly relieved. With one exception the several investigators did not believe the risks involved in the administration of large doses of steroid are justified in the treatment of acute rheumatic fever.

RALPH W. ALEXANDER

Cornell University

Dennis, R. H. Retinal Separation in Young Adults, *J. Maine Med. Assoc.*, *49:* 37–39, Feb. 1958.

Detachment of the retina, if untreated, will result in blindness in practically all cases. It can be treated in nearly 85 per cent of the cases if discovered early.

Symptoms of retinal separation are varied, may produce only mild distortion of vision, or cause total loss of vision. Eighty-five per cent of the cases noticed flashes of light. Common symptoms were floating opacities, moving spots, "hairs," or "spider webs." Pain is not common. A patient may see better in the morning on arising. A prior history of head trauma is helpful in establishing diagnosis. Objective findings usually show impaired visual acuity, occasionally a larger pupil. Ophthalmoscopic examination reveals separated retina, with whitish folds; the retina may be mobile; or the retina may show an irregular surface or cobblestone appearance. The vessels are darker and tortuous. Sometimes ballooning can be seen or a tear. Simple confrontation test may indicate a defect in visual fields.

LEONA B. YEAGER

Northwestern University

DiSant'Agnese, P. A., and D. H. Andersen. Cystic Fibrosis of the Pancreas in Young Adults (editorial), *Ann. Int. Med., 50:* 1321–1330, May 1959.

With the advent of antibiotics to help control the respiratory symptoms, cystic fibrosis of the pancreas, which has been recognized for the past twenty years as a fatal disease of childhood, becomes a problem in the adolescent and young adult. This hereditary dysfunction of the exocrine glands is manifested in children as severe bronchial obstruction leading to chronic emphysema and secondary bronchopneumonia and usually some pancreatic deficiency (from which the disease takes its name) producing large, foul stools and steatorrhea with malnutrition in spite of voracious appetite. In young adults less dietary restriction seems necessary, even without pancreatic replacement therapy, and the appetite decreases to more nearly normal, but complications are more frequent: sinusitis, hemoptysis and spontaneous pneumothorax, cirrhosis of the liver with portal hypertension, appendiceal abscesses and abdominal masses, and possible diabetes mellitus. Chloride and sodium levels in the sweat are markedly increased in 99 per cent of the known cases, and provocative tests of sweat electrolytes (in the absence of adrenal insufficiency) show

promise of help in recognizing heterozygous carriers or partially manifested fibrocystic disease.

RUTH BENNETT

Northwestern University

Evans, A. S. Infections with Hemadsorption Virus in University of Wisconsin Students. *New Engl. J. Med., 263:* 233–237, Aug. 4, 1960.

As a progress report on a continuing study of respiratory diseases in University of Wisconsin students Evans reports on the occurrence of two recently discovered members of the myxovirus family termed hemadsorption viruses Types 1 and 2.

Patients admitted to the student infirmary because of respiratory illness constituted the study population. Paired serum samples from such patients were tested against hemadsorption Types 1 and 2 viruses. An incidence of 8.5 per cent of Type 1 and 1.5 per cent of Type 2 was found.

The clinical picture observed in these infections did not appear to differ from that seen in other respiratory infections and included diagnoses of acute respiratory disease, acute pharyngitis, acute tonsillitis, and pneumonitis.

The author observes that even with this addition to the known causes of acute respiratory disease still more than 70 per cent of cases are of unknown etiology.

RALPH W. ALEXANDER

Cornell University

Ferguson, M. J., S. Germanos, and W. J. Grace. Meprobamate Overdosage: A Report on the Management of Five Cases, *A.M.A. Arch. Int. Med., 106:* 237–239, Aug. 1960.

The extensive use of meprobamate has made it widely available for use with suicidal purpose. The authors describe five cases of meprobamate poisoning and point out that hypotension is the most serious feature. It may be insidious and sudden in onset and profound in degree and often out of proportion to the apparent depth of coma. Frequent determination of blood pressure is neces-

sary. Vasopressors will be necessary if the systolic pressure falls below 90 mm. of mercury. Analeptic drugs and antibiotics were not used by the authors, who believe such medication is unnecessary in the management of meprobamate and barbiturate poisoning.

RALPH W. ALEXANDER

Cornell University

First National Conference on the Medical Aspects of Sports, Dallas, Texas, November 1959. *Proceedings*. Chicago: Amer. Med. Ass., 1960.

This conference sponsored by the American Medical Association was held in Dallas, Texas, and represented a giant stride in the progress of athletic medicine. Speakers included not only selected physicians but also leading authorities in the fields of physiology, physical education, and athletic training, each individual being invited because of a special interest in or contribution to athletic medicine. In this symposium, such subjects as oxygen debt, "pep" pills, football and baseball helmets, training methods in track, prevention and treatment of athletic injuries, as well as the pathology of trauma with special reference to sports injuries were all presented and are recorded in the proceedings. Some of the articles dealing with experimental laboratory work may be heavy reading and perhaps hard to digest. Fortunately, this is not the case with most of them. The average physician interested in athletic medicine beyond the purely orthopedic standpoint will find much that will interest and challenge him. Beyond this, he will find new sources of reading in the ample bibliographies that are included in most of the papers. This is recommended reading.

ALEXIUS RACHUN

Cornell University

Harsha, W. N. Forensic Medicine: Legal Ramifications of Athletic Injuries, *Postgrad. Med., 27:* A52–A59, June 1960.

While this article appears to be directed primarily toward the coach and trainer, it does emphasize the point that all persons interested in athletic medicine should consider the possible legal

ramifications of athletic training and athletic injuries. Dr. Harsha points out that the release which a parent or guardian may sign allowing the participation of an individual in athletics is not binding if there is negligence on the part of the person supervising the activity, and this person may be held personally liable. This personal liability may be incurred through (1) failure to recognize an injury, (2) direct instruction to play in an injured state or with inadequate equipment, (3) sending an untrained or unconditioned athlete into active contact competition with subsequent injury, (4) inadequate supervision, and (5) conducting an unusually rough athletic contest or a disciplinary type of game.

Dr. Harsha closes by again emphasizing the need to have competent medical personnel available at all times during athletic encounters.

J. M. Miller

Indiana University

Redlich, F. C., and Maya, Pines. How to Choose a Psychiatrist, *Harper's Magazine, 220:* 33–41, March 1960.

Written for the intelligent layman, this article describes "the main types [of psychiatrists] and how they differ, . . . what you can expect them to accomplish, . . . the kinds of people they cannot help, . . . and how to tell whether they are worth what they cost." Especially those colleges with limited or no psychiatric services of their own may find this information helpful to their staffs and to students. All colleges and universities might make it available or call it to the attention of students so that they may know better how to obtain psychiatric treatment or help others with this, not only while in college but also after graduation.

John E. Reinhold

University of Pennsylvania

ADVERTISEMENT

Experience: The Most Important Element in a Student Insurance Program

BY RICHARD F. GILMORE

Special Risks Division, Continental Casualty Company

IN the course of many years, I've witnessed many cases where an inexperienced company, wanting to get into the field of Student Insurance, has created a nightmare of problems for themselves, the school, the students and their parents.

There are many pitfalls awaiting the inexperienced underwriter. Rates cannot be adapted from other classes of people. Policies cannot be adapted from general hospitalization contracts. It takes know-how to present a student insurance program to the student and his parents. Trial and error can only result in misunderstandings on coverage, poor claims service, the wrong type of coverage. Lack of proper soliciting means too few students enrolling. Any of these problems can result in irate parents and students, and frustrated, disappointed school administrators. The company loses too. Many thousands of dollars can be subject to disastrous losses because of inexperience. Poor claims service can severely hurt a company's other business.

A student program has but one primary objective—to provide medical expense protection—to help pay the medical bills when an accident or sickness occurs to the student. It must be designed to do the most good for everyone covered, at a premium rate which most of the students can afford. The job requires *Experience.*

The importance of *Experience* in handling student insurance programs would seem to be relatively simple, considering the main objective is to provide medical expense protection, but we must consider that with all the advantages of group insurance, there can be disadvantages to the individual in providing too little coverage or a very broad program which costs him too much.

Of course, this is true of any group hospitalization program. A student insurance program must also take into account what medical services are provided him by the school; these services vary from small dispensaries to legally constituted hospitals. What special hazards may exist for him at school? Will the program cover the varsity football team? Do the students commute from home? Are there any sports clubs?

It is not enough to merely relate some general actuarial tables based on an average age group of 18 to 24 years of age to a particular group of students. My company is probably not unique in that its approach to making up a student insurance plan is based on many years of cumulative experience with many man hours devoted to devising the policies and rates. The basis of our student rates comes from extensive surveys of the actual claim files by the Actuaries. Over the years we have been able to accumulate extensive information with hundreds of thousands of students exposed to all kinds of accident and sickness hazards, at hundreds of schools.

Of equal importance, years of experience in devising student insurance policies has been beneficial in overcoming many of the shortcomings that once existed. Today, a student insurance policy and the certificate is a simple, easily read, easily interpreted form. This is a facet of the program which cannot be understated. The policy or certificate is, after all, the most tangible evidence a student has of his medical expense protection. If he can read it and understand it, he can realize the security that piece of paper represents.

Experience gives the insurance company the right course to reach the main objective—medical expense protection, because it knows the health problems, the most common disabilities which affect the college student. In general, their needs are different from those of an age group made up of 30–40 year old people. Just as my Company's *65 Plus* program is designed for the needs of our older citizens, our college students must be treated in relation to their particular needs. Let me now go one step further. Each student body at each school has its particular needs to be reckoned with. A proper program, then, needs special attention.

In summary, *Experience* will dictate how to reach the goal of providing medical expense protection through:

1. Proper underwriting knowledge;
2. Simple, easily understood policies;
3. Fast, efficient claims paying source;
4. Periodic reviews of the program to meet changing needs;
5. Supplementing the existing Health Service facilities;
6. Covering the needs of the students in an adequate and flexible program;
7. Eliminating unnecessary trial and error methods;
8. Fostering good relations with the students and their parents;
9. Striving towards coverage for all students through proven solicitation methods.

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